The Builder.

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History and Construction of the Pianoforte.

KNOWLEDGE of music, however slight, has of late years become as essential an item of a liberal education as any other of the numerous studies and accomplishments that have gradually been added to the time-honoured indispensables,—reading, writing, and arithmetic. Improvements in mechanical science, by economising labour and reducing cost, have put the possession of the means of following this most captivating pursuit within reach of the many, where it was formerly limited to the few; and, as in the sixteenth and seventeenth centuries no family of consideration thought its establishment complete without a "set of viols," so now, in the nineteenth century, but few families, however limited their means, consider their *comforts* even provided for without the possession of a pianoforte of some class or other, from the Grand to the Piccolo. But of those who possess one how few know, or care to know, the history of the origin and gradual development, or nature of the mechanism of an instrument whose vast compass, adaptation for brilliant and varied display, and general utility constitute it emphatically and literally the "household orchestra." The want of a convenient and easy road to such knowledge is now, however, supplied. In 1855 we called attention to the work of Dr. Rimbault and Mr. Hopkins, entitled "The Organ, its History and Construction," wherein the antiquarian learning of the one and the constructive knowledge of the other had found a congenial task in a valuable historical and critical account of that noble instrument. We now have to speak of a new work, by Dr. Rimbault, upon "The Pianoforte, its Origin, Progress, and Construction,"* wherein this most useful, universal, powerful, and, in many respects, most perfect of instruments, receives that amount of critical and historical investigation which the importance of the subject so well deserves.

There are few sciences more illustrious in pedigree, more remote in origin than music. Pythagoreans, Platonists, and Peripatetics—in fact almost all the Greek philosophers—either wrote treatises upon it, or alluded to the subject more or less in their writings, but the greater part of them are unfortunately lost: unfortunately, we say, on account of their antiquarian interest, but not for any benefit they might have conferred upon the science. In tracing its first beginnings we find ourselves bewildered in their speculations, and, accepting their assurances for our safe guidance in our search, we are persuaded to abandon the realms of reality for the fields of fiction, and undertake a journey into the clouds with Aristoxenus and Aristotle, Plato and Pythagoras, Apuleius and Athenæus, Pausanias and Plutarch, and other celebrities, as our travelling companions. Having made the round of the heathen mythology, listened to the rival claims of Egyptian, Greek, and Indian deities, to the "invention," and ascertained to our own satisfaction that Osiris and Isis, Hermes, Brahma and Vishnu, Apollo, Mercury, Minerva, and Pan had an equal share in it, we feel a particular desire to descend from our uncomfortable elevation, and throwing out our grappling-irons to the tomes of Burney and Hawkins for aid in our perilous descent, with thankful hearts find ourselves once again on *terra firma*.

The beautiful myths that entwine their graceful flowers of fiction round each page of the legendary history of ancient Greece, investing each hero with the attributes of a demigod, covering each ruin with an undying verdure, and endowing each event with a charm unspeakable, constitute a halo of glorious uncertainty, to probe which too closely is a task the scholar shrinks from undertaking, lest, by exposing the frail foundation upon which the beautiful fabric of the Classic is erected, his reliance on the faith of ages might be shaken, and, its gorgeous imagery removed, the poem of his admiration be reduced to the unadorned simplicity of sober prose. With quiet enjoyment, therefore, albeit with certain mental reservations, does he listen to the speculations of Plato and Pythagoras, Varro and Lucretius, upon the philosophy of sounds, and with them detects the first beginnings of the science of music in the noise occasioned by the revolutions of the planets, or the rustling of the wind amongst the trees and bulrushes, or the mighty rushing of the torrent, or the silvery murmur of the stream, or the sweet melody of the birds, or other sounds occasioned by the agency of natural causes, and is satisfied. The antiquary, on the other hand, finds his keenest enjoyment in the task of penetrating mystery and removing error; and rejecting the myths and fallacies that form the scholar's happiness, and abandoning theory in his search for truth, he concentrates his energies in unravelling all that relates to mechanical contrivance, relying more upon one actual specimen, however mutilated, than upon fifty descriptions, flowery, but fallacious. Thus does the fact of many figures of ancient Greek lyres bearing the form of a tortoise bring more conviction with it than the account of Apollodorus, who attributes the invention of the art (he meant the form of the instrument) to the encounter of Hermes with the shell of that animal: thus does the actual form of the Egyptian harp, as shown by their paintings, betray more indubitably its type in the form of the bow, than the classic story of the adoption of that form by Apollo, upon hearing the twang of the bow-string of Diana; and the more so as the Greek and Roman monuments do not bear that form, whilst the Egyptian invariably do.

Music is an art that, disconnected from spoken language that it may serve to illustrate, receiving no aid from anything tangible or defined, appeals more to the imagination of those to whom it is addressed to adopt, embody, and mould into material form the picture intended to be conveyed through the medium of melodious and harmonious sounds alone, than any other of the circle of the imaginative arts. A statue, or a painting, or a building appeals to the heart through one sense—the sight, and presents the same appearance to all who behold it, and it is but in our different powers of appreciation, or our different degrees of cultivation, or of taste, that the impression conveyed by it will vary in character or intensity. A musical composition appeals also to one sense,—the hearing; but its form is immaterial, and cannot be defined, its visit is instantaneous, and cannot be prolonged, its beauties are a mystery, and cannot be explained. There is nothing positive in its construction, yet we seem to grasp it; it speaks a language we have never learnt, yet we comprehend it; it bids us follow it, we know not why or whither, yet we obey it. Our imagination completes the form it shadows forth, and fills in the landscape presented to us but in outline; and with every phase of difference in our mental conformation, so do we contribute more or less reciprocity of intelligence to its action, and reap more or less effect from its cause. Fortunate are we, in the nineteenth century, in the possession of a musical wealth that cannot be exhausted, a musical knowledge that cannot be disputed: when the compositions of the ancients have become matters but of history, and their speculations have succumbed before the light of true knowledge and real science. For whether we look at the subject of music as scholars, or antiquaries, or musicians, no amount of argument can hide the fact from us that it is to the three last centuries that we owe the development of the power of sound as a medium for the soul's expression, as mighty in its operations as the painter, or sculptor, or architect's art, or poet's pen. When, with the ancients, poetry, painting, sculpture, and architecture had attained a high perfection, music was but in its infancy; and the reason was simply that the latter is an art dependent upon a particular branch of manufacture, requiring a technical knowledge and mechanical skill with which the ancients were totally unacquainted. What representations of Greek musical instruments have come down to us betray a means so totally inadequate to its end, that we can but wonder how the art became of such national importance, that to attempt to improve the cithara was considered a capital offence.

Greek instrumental music was but of two kinds, *αὔλησις* and *κιθάρισις*, and the imperfections of the *αὔλος*, a pipe pierced with holes, must have been as great as those of the *κίθαρα*, or *χέλυς* (in Latin, *testudo*), an improvement upon the original *λύρα*, or lyre (in Latin, *fides*), the varieties in the forms of which latter defy classification. These primitive instruments seem to have been the only medium to which music looked for its expression; and thus we can scarcely wonder that harmony was unknown, rhythm not observed, and the two grand distinctions of major and minor not discovered. Their abstruse calculations, as set forth by Aristoxenus, Euclid, and others, produced most unsatisfactory results. Some specimens of Greek music by Kircher and others, are given by Burney, with an imaginary rhythm and in modern notation; but nothing satisfactory can be gained from them: and, as old Roger North observes in his "Memoires of Musick," "for want of reall or practicable specimens, it is not understood what their musick was, nor yet, by means of all the pretended discoverys, can any piece be accordingly framed that mankind will endure to hear, although Kircher hath vainely attempted it."

The Romans, though they did not advance the science, yet invented a new notation, and improved the construction of their instruments. The flute was held by them in most esteem, and its players most honoured, but the

> "Decus Phœbi, et dapibus supremi
> Grata testudo Jovis"

is equally sacred to classic Rome as to classic Greece.

Abstract calculations were with the ancient Greeks the point to which their musical studies were directed; and, in the pursuit of the phantom they lost sight of the true principles upon which as a science it is founded, as an art it is developed. "Thus," says Macfarren, "the Greeks had their three genera and their six modes; thus these latter were adopted in the Christian Church; thus a knowledge of the ancient rules, as transmitted by Boethius—not a practical capability in composition or performance,—became the acknowledged test of musicianship; thus when, some six centuries since, the combination of sounds inducing harmony was first practised, the purely artificial rules of counterpoint were invented: and these retained their despotic authority to stifle the imagination, to limit the means of expression, and so to contract music within the arbitrary bounds of scholastic contrivance, from which, about two hundred and fifty years ago, scarcely an effort was made to emancipate it.

* "The Pianoforte, its Origin, Progress, and Construction; with some Account of Instruments of the same Class which preceded it, viz. the Clarichord, the Virginal, the Spinet, the Harpsichord, &c. To which is added a Selection of interesting Specimens of Music, composed for Keyed Stringed Instruments, by Blytheman, Byrd, Bull, Frescobaldi, Dumont, Chambonnières, Lully, Purcell, Muffat, Couperin, Kuhnau, Scarlatti, Seb. Bach, Mattheson, Handel, C. P. Emanuel Bach, &c." By Edward F. Rimbault, LL.D., Member of the Royal Academy of Music in Stockholm, &c. &c. London: Robert Cocks & Co., New Burlington-street, Regent-street, W. 1860.

Greatly as we must admire the ingenious labours of that galaxy of musicians, the brightest star among them still shines the honoured Palestrina, it is for their ingenuity—for the studied research they evinced,—and not for their power over our feelings, nor for any token of inspiration they present, that we admire them."

The descent from the primitive lyre of all those instruments which preceded the invention of the key-board, including the ancient harp and Mediæval psaltery, dulcimer, and citole, is a subject of much antiquarian interest, as showing the progressive steps that led to results so inestimable; but of far greater interest is the history of those instruments which succeeded that invention, and which, embracing the successive varieties of the clavicytherium, the clavichord, the clarichord, the virginal, the spinet, and the harpsichord, finally resulted in the pianoforte. "And here I may remark," says Dr. Rimbault, in his preface, "that a much greater antiquity is assigned to instruments of this class than has hitherto been ceded to them; although I do not go the length of the learned Abate Pietro Gianelli, who, in the article 'Cembalo,' in his 'Dizionario della Musica,' says 'that King David knew something of this instrument, is apparent from the 130th Psalm, where occurs the expression, *Laudate eum in cymbalis jubilationis*, which is, of course, to suppose that King David wrote and spoke the Latin language; for 'cymbalum' is but the Vulgate translation of a Hebrew term!"

The *clavier*, or key-board, having been applied to the organ at the close of the eleventh century, the adaptation of so great an improvement to stringed instruments would probably soon follow. The clavicytherium, or *keyed cithara*, was the first simple result: a small oblong box containing the strings, of catgut, which were sounded or snapped by quill *plectra* attached to the keys.

The clavichord, or monochord, or clarichord, was the next phase of the instrument, and the engraving from Luscinius—the earliest extant—conveys the type of the square pianoforte. Its strings were of brass, and its action simply a piece of brass wire, placed vertically at a point where it could be either struck or pressed against its proper string, and where it might be retained at pleasure by the firm pressure of the finger. The affection of the elder and younger Bach for this instrument is well known, and Mozart himself, when travelling, always included one in his baggage. Dr. Rimbault hazards a derivation of the term clarichord, and its probable point of difference from the clavichord. The clavicymbal was another variety of the same class, and was probably, as Hawkins considers, the origin of the harpsichord. It was sometimes upright, sometimes horizontal, with strings of steel wire, struck by quill-*plectra*.

Dr. Rimbault has diligently collected his authorities upon these various instruments of a common type, and learnedly helps us to make the best of them; nevertheless, the perplexities of the *monochord*, the *cembalo*, and other obscure points, still leave a wide field for future explorers. "The last maker of the clavichord in Germany, of any note, was Krämer, of Göttingen, some of whose instruments may still occasionally be met with in the old baronial residences with which that romantic country abounds." Contemporary with the clavichord, though not superseding it, as it continued in use up to the introduction of the pianoforte, were the virginal and the spinet. M. Fétis, in a "Sketch of the History of the Pianoforte," from the *Harmonicon*, thus describes their peculiarity:—"When the defects inherent in the construction of the clavichord were discovered, a plan was devised of striking the strings with small pieces of quill affixed to minute springs, adjusted in the upper part of small flat pieces of wood termed *jacks*. These jacks were directed perpendicularly upon the key, and when the jack had made its escape, after the string had been struck, the jack fell in such a manner as to be able to reproduce anew the sound at will."

The virginal was of a rectangular form, like a small pianoforte; the spinet was of the form of a harp, laid horizontally, and both were much in vogue towards the close of the sixteenth century. The etymology of the virginal seems probably derivable from its use by young ladies; but a modern writer, with refined taste, has referred its name to the conventual custom of accompanying hymns upon it to *the Virgin*. The etymology of the spinet is from *spina*, a thorn or quill, the tone being produced from a crow's quill inserted in the jack. Its chief difference from the virginal was in form, and certain alleged differences of construction Dr. Rimbault has not been able to recognise, at least, in any that he has examined.

The next and most perfect of the progeny of the key-board, and the immediate precursor of the pianoforte, was the harpsichord. Its form was precisely that of the grand horizontal pianoforte, and its origin suggested by the harp, from which instrument it derived its name. In the spinet and virginal there was but one string for each tone; but another was added to the harpsichord, the mechanism of the jack remaining the same. At length, Hans Ruckers, of Antwerp, effected an important reform in its construction. "He gave his harpsichords a more powerful and connected tone, by joining to the two strings in unison a third range of shorter and finer strings, tuned to the upper octave of the others, and which could be entoned at pleasure, either together with them or separately. He mounted his harpsichords partly with catgut strings, and partly with steel wire. In imitation of the organ, he added a second key-board to his instruments, the object of which was to allow three strings to be heard at once, or only a single one, at pleasure. In fine, he extended the compass of his harpsichord to four complete octaves (from C to C), by adding four grave sounds to the forty-five which existed before." It was towards the close of the sixteenth century, about 1590, that Ruckers first began to manufacture his harpsichords, and a prodigious number of these instruments, by himself and his sons, were sent into France and Germany.

Many were the varieties and improvements afterwards effected in the seventeenth century. In Italy, Farini produced an instrument to which he gave the old name of *clavicytherium*, then long obsolete, wherein he employed catgut strings instead of wire, which gave them a more mellow and soft quality. His example was followed by several German makers. Rigoli, of Florence, invented the vertical harpsichord, taking the idea from the earlier clavicymbal,—an idea since imitated in all pianofortes of the *upright* class; and Richard, in France, improved the tone by substituting small slips of cloth in the place of the quill for producing the sound. Instruments, too, were constructed, with various modifications, to imitate the tones of the harp, lute, mandolin, violin, &c., wherefrom tones were elicited for which no analogy could be found, and which were honoured with such new and fantastic names as *jeu céleste*, *angélique*, &c.

The result of these various experiments led to the invention of the *stops*, and from them the *pedals*. Shobert, the composer, was the inventer of a harpsichord with a double bottom, in which was placed, above the first sounding-board, a range of strings of two octaves, of considerable size and length, to strengthen the bass, which were sounded by mechanism, acted upon by a range of pedals. Others followed. Hopkinson, of Paris, substituted metal tongues for crowquills; Silberman, of Freyberg, invented the *clavecin d'amour*, and Stein, of Augsburg, the *vis-à-vis*,—a harpsichord with a key-board at each end, by which means two could play at the same instrument.

"But perhaps," says the author, "the most extraordinary invention of the time was that of Louis Bertrand Castel, a Jesuit of Montpellier. This worthy monk, whose 'Physical System' ranks among the best philosophical works of the early part of the last century, and whose 'Optics of Colours' is still esteemed, studied vision and the nature of colours, as blended or contrasted with each other, till, his imagination getting the better of his understanding, he confounded the eye with the ear, and associated the harmony of tints with that of sounds. Infatuated with this idea, he invented what he called an *ocular harpsichord*, which was strung with coloured tapes instead of wires; and, being placed in a dark room, when the keys were touched, the transparent tapes which respectively corresponded with them became visible; and the various successions and combinations of colours, consequent to this operation, produced effects on the sight which his fancy assimilated to the impression made on the ear by melody and harmony."

The inherent defect of the instrument—its affinity in tone to the class of instruments struck by the finger or *plectrum*—had long occupied the attention of three men of different countries, and a threefold claim was almost simultaneously made to the invention of the Pianoforte.

We have thus far very briefly followed Dr. Rimbault, in the leading phases of that class of musical instruments which finally resulted in so marvellous a triumph; but must reserve our remarks upon the history and construction of the perfected instrument itself for another occasion. To examine all the works, or passages from works, that might throw light upon his subject has been the author's aim; and as he himself observes, "the task has been one of no small difficulty, the materials being widely scattered, and in some cases almost inaccessible. The amount, too, of miscellaneous reading required, was almost enough to deter the most ardent explorer after hidden treasure, from pursuing his labour." A rich mine of entertaining anecdote is presented to the reader, and the sources of the author's information are freely exposed for the benefit of those whose love of the antiquarianism of the art may prompt them to inquire into the subject more deeply; whilst for those who desire to study the mechanism of the pianoforte itself, the second division of the work is specially reserved.

The account of the ancient Egyptian and Greek stringed instruments is short, but sufficiently comprehensive for its purpose as an introduction to what follows, and some interesting discussion upon the harp, from the accounts of Bruce, Rosellini, Wilkinson, Layard, &c., is of value. The Biblical instruments of the Hebrews are wrapped in still greater uncertainty, the various translators of the Bible all differing as to the nature of the terms there found, and the Jewish rabbins themselves knowing no more of the matter than those least acquainted with Jewish matters. Thirty-four different instruments are there enumerated, supposing that the titles of several psalms, as *Michlam*, *Sigaion*, *Sheminith*, &c., indicate the names of the instruments used in performing them. But the authority for this is very doubtful. The "Harmonicorum Libri xii.," of Mersennus, a Frenchman, and a great Hebrew scholar of the seventeenth century, and the "Musurgia Universalis" of Athanasius Kircher, a German Jesuit of the same period (much referred to in the work), to describe these instruments; but their interminable details only perplex still more the question, and it is to the wonderful discoveries in Egypt that we must now look for information.

The Mediæval instruments that preceded the invention of the key-board, receive much assistance from the "Musurgia, seu Praxis Musicæ" of Ottomarus Luscinius, 1536,—a valuable work, from which numerous illustrations are copied.

Mr. Hendrie's well-known translation of a manuscript of the thirteenth century, by the monk Theophilus, "De Diversis Artibus," has afforded Dr. Rimbault a valuable chapter on the subject of "cymbal-making for the use of the church," which he has transcribed entire.

The nature of the cymbal has never been properly understood. It is generally considered as simply rythmic, producing sounds unappreciable by the ear; but this was not the case with those of the Middle Ages. From the treatise of the monk Theophilus, we now for the first time learn that they were capable of being tuned to the various sounds of the scale.

The psaltery, the dulcimer, and the citole, and twenty more obsolete instruments of the Middle Ages, all bearing some affinity

either in name or character to those of antiquity, and alluded to in the romances and ballads of the fourteenth, fifteenth, and sixteenth centuries, are brought to our notice in the introductory portion of the work of Dr. Rimbault, and many valuable illustrations from books and rare manuscripts render it more intelligible to the general reader.

THE ROYAL ACADEMY AND THE NATIONAL GALLERY.

THE National Gallery is closed to admit of the proposed alterations being made in the building. A return to the House of Commons, moved for by Mr. Adderley, has been published, giving the correspondence between the First Commissioner of Works and Capt. Fowke, relating to his plan for alteration of the National Gallery. This plan, we may mention (which has since been much talked of), was briefly described in our pages as long ago as April, 1859.* When it was received by the First Commissioner, he sent it to the council of the Academy for their observations. In reply the council returned a long list of comments, in the course of which they said,—

"It will be at once evident, from even a cursory examination of these plans, that Captain Fowke has not made himself acquainted with the requirements of the Royal Academy. No offices are provided for the secretary, the clerk, or the porters. No separate accesses are afforded (as at present) for the keeper to his apartments, for the students to the schools, and for the public to the exhibition galleries, but all will have to enter by one great hall, common to the National Gallery and to the Royal Academy, this arrangement would be quite inadmissible, and productive of the utmost disorder and confusion, rendered all the greater by the very imperfect lighting of this hall.

These important defects having been pointed out to Captain Fowke by the president and treasurer, he proposed a supplemental plan, which is affixed to his first plan, but this supplemental plan gives such inadequate space to the Royal Academy, that it would be impossible properly to carry on the affairs of the institution with such restricted accommodation.

The Royal Academy is extremely desirous to concur with the First Commissioner of her Majesty's Works in any alteration which he may consider most conducive to the advantage of the public: they only desire to have equal accommodation to that which has been appropriated to them for so many years, although it is certainly very insufficient for the great objects of the Royal Academy, viz., 1st. The gratuitous instruction of students in the fine arts; 2nd. The annual public exhibition of works of art.

A separate entrance and a separate hall are absolutely necessary for each of the two institutions; for the Royal Academy especially; and a hall is necessary for the reception of their large collection of casts and models. Unless, also, a separate entrance be provided for the students, any rooms that may be appropriated for schools could not be used during the period of the exhibition, and they would thus be rendered altogether useless during that time."

Capt. Fowke replied at some length, expressing his surprise at starting that—

"The Royal Academy should have felt themselves at liberty to put a veto upon any alterations being made in a public building, in which they are only tenants on sufferance, more especially when such alterations are proposed with a view to remedy the inconvenience and expense which their continued occupation will entail upon the public;"

but he did not succeed in removing the First Commissioner's objection to adopt the plan.

The plan which is about to be acted on is Mr. Pennethorne's, and includes flooring over the central hall at the level of the galleries, and an alteration of the staircases which, in the case of the Royal Academy, will, if we understand rightly, come up into the middle of the "Miniature-room," somewhat awkwardly. We have reason to believe that the council of the Academy are far from satisfied, and that some of the members are most anxious that Government should postpone what seems to be mere patching, and give the Academy a proper site whereon to erect, at the Academy's own cost, a fitting building for their purposes,—the instruction of students, and the public exhibition of works of art.

The report recently issued by the council of the Royal Academy shows that the secretary's salary is increased from 140*l.*, with 150*l.* per annum in lieu of apartments, to 250*l.*, and the same allowance for apartments. That of the keeper is made 200*l.* in place of 160*l.* The treasurer remains at 100*l.* per annum. The librarian has had his salary doubled, being originally 60*l.*, but now 120*l.* The clerk is paid 150*l.*, and has an apartment provided for him. The housekeeper's salary, for herself and assistants, is increased from 70*l.* to 100*l.* per annum. The two porters receive 60*l.* instead of fifty guineas, each, and the assistant 50*l.*, in the place of 40*l.*

The allowance of pensions now stands thus:—1. To an Academician, a pension not exceeding 150*l.* per annum, provided the sum given does not make his annual income exceed 200*l.* 2. To an Associate, a pension not exceeding 75*l.* per annum, provided the sum given does not make his annual income exceed 160*l.* 3. To a widow of an Academician, a pension not exceeding 75*l.* per annum, provided the sum given does not make her annual income exceed 160*l.* 4. To a widow of an Associate, a pension not exceeding 45*l.* per annum, provided the sum given does not make her annual income exceed 100*l.*

* Vol. XVII. p. 235.

THE CAMBRIAN ARCHÆOLOGICAL ASSOCIATION AT BANGOR.

AT the Bangor Congress of the Cambrian Archæologists, Mr. Charles G. Wynne, M.P., presided, and delivered an interesting opening address. In the course of it he said,—I shall endeavour to show that archæology, far from being a mere unprofitable dilettantism, has a positive money value, one appreciable not only by the literary or scientific mind, but even to those who look exclusively to material interests—that commerce, in a word, no less than history, or art, is under obligations to archæology. I allude to the case of our pottery and earthenware manufacture, which is now an importont branch of our national trade. At the time when Wedgwood first began his operations, England was an importing country with regard to this article of trade, drawing her supplies from the Continent, from Holland, from France, and from Germany. About the year 1760, Wedgwood established himself in Staffordshire. The models which he selected for imitation were all taken from the antique, from the Portland vase—Greek vases, cameos, and old coins,—but above all from the magnificent collection of Etruscan vases and earthenware, which were purchased about that time from Sir William Hamilton, for the British Museum. Such was the immediate improvement in classical elegance and purity of design which the manufacture derived from these sources, that, within a very few years, England became an exporting country in this article, and the trade in it has been steadily developed since, until, in the year 1857, the declared value of the earthenware exported from the United Kingdom was 1,488,668*l.* Wedgwood's own sense of the obligation under which he was to his imitation of his ancient models, was marked by the name he gave to the new village, formed round his works in Staffordshire, which he called Etruria in honour of them. More recently still, the collection of Etruscan antiquities made by Prince Canino, and brought to England by Signor Campanari, has marked another stage in the progress of this branch of industry; and it is a fact that at this moment the best silversmiths and jewellers in London resort constantly to the British Museum to study these models, and copy them for reproduction. The well-known Minton ware—to which belong the most beautiful specimens of fictile art in the present day, are either copied from, or due to the study and imitation of, the Majolica ware of Mediæval Italy; whilst the smaller objects of Assyrian art, brought from Nineveh by Mr. Layard, are extensively copied by artists, and reductions of them made, on a smaller scale, in Parian, in marble, or in bronze.

The first paper read was on "The Military Architecture of Wales," by Mr. G. T. Clark.

"The greater number of the existing buildings," he said, "are probably of the reign of Henry III., or early in that of Edward I. Some of the grander examples, such as Caerphilly, Kidwelly, Beaumaris, are regularly concentric, and quite equal to anything in England. Others, as Conway, Caernarvon, Caldecot, are a mere inclosure, divided into courts, and contained within curtain walls thickly studded with towers, and broken by regular gate-houses, and having the hall and other buildings disposed against the curtain along the sides of the principal court.

The smaller castles of this type, as Dinas Powis, Pennard in Gower, perhaps Whitecastle, and many others, seem to have been a simple inclosed court, with walls from 10 to 30 feet high, mural towers, and a gate-house, but with small permanent accommodation within. The dwellings were chiefly structures of timber placed against the walls, and have in consequence long disappeared.

When a castle, as Neath, Caernarvon, Newport, and Cardiff, was placed close to a town, it usually formed a part of the circuit of the wall. At Chepstow this does not appear to have been the case."

On the second day an excursion was made to Beaumaris, where the castle was specially illustrated. In the evening the Rev. John Griffith, rector of Merthyr Tydvil, read a paper, entitled, "The Diary of John Taylor, Water Poet to his Majesty King Charles I., through Wales in the Year 1652, in his Seventy-fourth Year."

The Rev. H. Longueville Jones delivered to the meeting the result of his summer's study of the "Incised Stones" with which Wales abounds, and which are most important to the proper and correct study of archæology. They had very few old MSS., but they were exceedingly rich in these stones—richer than most part of the countries of Europe, of which they ought to feel very proud and do their utmost towards their preservation. The rev. gentleman pointed out to the audience by means of diagrams, several inscribed stones some of which had been only recently discovered. Amongst the most remarkable were those of Llansadwrn and Llangadwaladr: the latter, in his opinion, could not have been so early as the former. He pointed to others of a very early date found at Penmachno, preserved through the exertions of the president (Mr. C. Wynne) and his family. One of them had the Greek monogram, and the following inscription:—

CARAVSIVS
HICIACIT
INHOCCON
GERIESLA
PIDVM

It means that "Carausius lies here in this heap of stones," that is, in a carnedd. It was rescued by Mr. Wynne, but was well known to Pennant, who met with it in going from Penmachno to Ffestiniog. The other stone had the following inscription:—

CANTIORIHICIACIT
VENEDOTISCIVEFVIT
CONSOBRINO
MAFILI
MAGISTRATI—

which showed that he was a Venedocian (Gwynedd) citizen. The last word "Magistrati," was never found upon any other stones, and it must carry them back to a very early period. It is hoped now that those stones are going to be placed in the new church at Penmachno, they will be handed down unimpaired to future generations. He (the rev. gentleman) had himself found one some few weeks ago at Spittal. It commemorated the burial of a man and his mother, and was very ancient. The emblems and the Christian characters which the stones bear, formed a very important link in the history of the British church, and established its independent existence, not by theory, but by facts. He next called attention to the Irish oghams found upon the stones, which were the work, no doubt, of Irishmen who came over and marked those they met with in this country. He hoped that some Irish scholar would ere long come over to decipher these characters, which to them was still a mystery. The following inscription is from a long rounded water-stone along the pilgrim road going to Bardsey Island, which Mr. Westwood thinks is of a late period, but which he (Mr. Jones) thought was rather early:—

MERACIVS
PBR
HIC
IACIT

That meant "Meracius the Presbyter lies here." He next came to the famous Frondeg Stone, in Anglesey, which still, he was sorry to say, served as a gate-post, and was certainly not safe in that position. It bore the following inscription:—"N NIH FILIUS CUURI CINI EREXIT HUNC LAPIDEM." He alluded to another stone from Pentrevoelas which bore a very early inscription, commemorative, some say, of Prince Llewelyn, which might be; but he thought it was much older. However, the inscription could not be read. The rev. gentleman concluded his very interesting and instructive address by impressing upon the minds of his audience, and especially those concerned in the restoration of churches, the importance of preserving from obliteration such ancient monuments of the past, which indicated to them the early national history of the country.

On Wednesday there was an excursion to Plas Newydd, Llanidan, &c., in Anglesey.

On Thursday the places of interest in Bangor were visited. Bangor, the *North Wales Chronicle* remarks, is a compound Welsh word—*Ban* signifying high, *gor*, choir. It was formerly known as Bangor-fawr-yn-ngwynedd. Leland says that Condage, a British prince, erected and dedicated here a temple to Minerva. A stone, 3 feet 3 inches long, was discovered at Tycoch, with an inscription:—

N.V.MN.C
IMP. CAESAR.M
AVREL—ANTONINUS
PIUS. PIX—AUC—ARAB.

Cressy says that Malgo Conant built a city called Bancor. On a rocky eminence, about a quarter of a mile east of the city, are to be found the remains of a castle built by Hugh Lupus, Earl of Chester.

At the cathedral, Mr. Kennedy officiated, and

pointed out the principal architectural details and history of the edifice. It appears that the cathedral church of Bangor is dedicated to St. Daniel, by whom it was first founded, about the year 525. He was elected the first bishop about 550 (but according to Usher, 522), and was the son of Dunawd Fyr, or Dinothus, abbot of Bangor Iscoyd, in the reign of Maelgwyn Gwynedd, Prince of Wales, who was the founder of Penmon and patron of Taliesin. He is said to have been the most liberal prince of his time. The cathedral was destroyed in 1071, by the Saxons, but was rebuilt by King John in 1212. It suffered greatly, as did the cathedral church of St. Asaph, in the wars between Henry III. and the Welsh, about 1247. During the rebellion of Owen Glyndwr the cathedral was destroyed by fire, A.D. 1402, and rebuilt in 1492 by Bishop Dermis or Dennis, *temp.* Henry VII. The tower and nave of the cathedral were added by Bishop Skeffington, in 1532. The ground plan of the cathedral church is cruciform, and comprises the following,—a nave, 138 feet long from the eastern side of the western wall to the western side of the archway of the chancel, and 25 feet wide between the inside of the arcades, which are 3 feet thick, and 34 feet high, including the clerestory, north and south aisles to the nave, extending to the transept, 110 feet long, and 15 feet wide, from the outer sides of the arcades to the north and south walls, which are 4 feet thick and 20 feet high; north and south transepts, each 34 feet long, 25 feet wide, and 34 feet high. The choir or chancel, from the outer or western side of the eastern arch to the inside of the eastern wall, is 55 feet long, 27 feet wide, and 34 feet high, the walls being 3 feet 6 inches thick. The tower at the west end is 18 feet square, and 61 feet high. The pinnacles are 7 feet 6 inches high.

Penrhyn Castle, Llandegai Church, and Penmaenmawr were visited in the course of the week, and various papers were read besides those already mentioned.

The next meeting of the association (for 1861) will be held in Swansea.

STEAM PRINTING.

THE great lesson of the rights and duties of labour and the working of commerce is yet to be taught to the great masses of the population. We, therefore, continue to direct attention to circumstances which show the advantages which have resulted to all classes from the introduction of steam power.

To set forth a fresh phase of the subject let the mind's eye penetrate the precincts of Westminster Abbey, where Caxton first in England used type to supersede the pen. It is not precisely known in what part of the abbey this important event in the world's history took place. Nevertheless, from that time to this, printers meet in "chapel"! Of course the process found opposition on the part of the comparatively small number of persons who were engaged in the production of books by hand. It may be that the clever penmen in "cloisters grey" looked upon Caxton's introduction with objection, and upon that worthy with anger and distrust, saying that no good could come of such new-fangled ideas. This is the kind of treatment which has been received by some of the world's best benefactors.

For long after Caxton's application of types in printing the onward progress of the art was not great. Useful and glorious ideas were, however, spread abroad; intelligence advanced, and a portion of the multitude were, although at a distance, put into communion with men of learning and intelligence. The demand for printed books and papers was great. The energies and skill of several persons were directed towards increasing the producing powers of the old-fashioned printing press.

For centuries after the introduction of type-printing, but little if any change seems to have been made in the construction of the machines. At length, various improvements were effected, chiefly by the Earl of Stanhope; Mr. Ruthven, a printer of Edinburgh; Mr. G. Clymes, of Philadelphia, who invented what is called the Columbian press. Then followed the invention of working a press by steam-power, which, in contradistinction to the old process, was called steam-printing. On the 29th of April, 1790, Mr. William Nicholson, a gentleman well known in the literary and scientific world, obtained a patent for a machine for printing on paper, linen, cotton, woollen, and other articles, "in a more neat, cheap, and accurate manner than is to be effected by the machines now in use." It does not appear that his plans and experiments ended in any practical results. Another machine for printing was invented by Messrs. Bacon & Donkin, for which they obtained a patent in the year 1813. This machine was so for different from that of Mr. Nicholson, that, instead of requiring the types to be cast so as to arrange on the surface of a cylinder, they were firmly fixed in pages on the face of revolving prisms, having four, five, or any required number of sides. The structure of the machine, however, proved too complicated.

After this, M. Köing, a native of Saxony, and a printer, introduced another machine. For some years this ingenious inventor had directed his attention to the subject, but his endeavours in the first instance were chiefly to accelerate the motion of the common press. Perhaps in some measure guided by the experiments made in England, M. Köing's labours were the first that produced any useful fruit. Requiring means to carry out his experiments, the German printer applied without success to many eminent printers in several of the continental capitals. He then turned his eyes towards this country, and arriving in London about 1804, he submitted his scheme to several printers of repute, who were not disposed to incur the risk of expenses: finally, he was introduced to Mr. Bensley, who speedily entered into an arrangement with him.

After a short course of experiments on the fabrication of a press which should have accelerated motion, and, at the same time, render the work of the man who inks the type unnecessary, the above gentlemen were joined by Mr. G. Woodfall and Mr. R. Taylor, both printers, the former of whom, however, soon retired. After great perseverance on the part of the remaining partners, it was discovered that the intended improvement of the common press could not be brought to bear, and that much labour and expense would be incurred, unless some radical alterations were invented. Cylindrical printing was then thought of, and after two or three years of renewed exertion, a small machine was produced, the characteristics of which were that instead of the printing being produced by a flat impression, similar to the ordinary press, the sheet passed between a large roller and the types still flat, and in lieu of the old-fashioned balls used by hand to beat over the types, so as to communicate the ink to their surface, skins were strained round smaller rollers, on which it was contrived to spread the ink, and under which the frame in which the types were fixed passed in its way to the printing cylinder. So much promise of success was given by this machine that it was deemed advisable to construct one on a larger scale. In order to carry out this idea the model machine was shown to Mr. Walter, the proprietor of the *Times* newspaper, and after settling what further improvements were contemplated, an agreement was made with that gentleman for the erection of two large machines for printing his journal. So secret had been the operations of the patentees, that the first public intimation of their invention was given to the reader of the *Times* of Monday, the 28th of November, 1814, who was told that he then held in his hand one of many thousand papers thrown off by steam.

The next advance in improvement was the manufacture of a machine for Messrs. Bensley, distinguished from those before mentioned by the mode of printing on both sides at once. Amongst other improvements was a method of register, which caused the pages to fall precisely on the back of each other. Deficiencies were now discovered in the inking: the strained skins were found to be uneven on the surface, and attempts were made to clothe the rollers with an elastic preparation of glue, treacle, &c., which has at length been brought to a certain perfection.

Another improvement which followed this was the mode of inking the types invented by Mr. Cowper, which was so superior, that Mr. Bensley adopted it for the use of his machines. Together with the successful application of steam machinery to this work, books and other publications for the use of the multitudes, rapidly increased, and printing establishments on a scale which had not before been thought of, sprang into existence. In 1827, Mr. Applegarth, of the Belvedere-road, in his machine printing-office, employed upwards of 100 persons. Here were carried on typefounding, stereotyping, composing, and printing: here were printed extensive works for Government and private individuals. Amongst them may be mentioned the *John Bull* and *Examiner* newspapers, the "Encyclopædia Metropolitana," and "The Every-Day Book."

Since the last-mentioned date the extension of the use of printing has been enormous; newspapers and other serial publications have multiplied, and so vast is the circulation of some, that the copyright of a penny journal has been sold for 20,000*l*. Other improvements have been made, and the speed of printing is constantly increased.

Again, we have been indebted to America for improvement in the steam-printing, and by means of an American machine, 12,000 copies of the *Illustrated London News* can be thrown off in an hour. For the purpose of printing this paper and its supplements, there are besides the large machine just mentioned, about a dozen others of various sizes and construction, to drive which requires four steam-engines, altogether of a nominal power of about forty-eight horses. It is almost needless to say that, but for the application of steam, the production of this and many of the other serials would be impossible: besides the general advantage, the application of steam to printing has created a vast demand for various descriptions of labour. These machines, so beautiful in their construction, that their working seems almost like the effect of magic, must have for long kept busy many hands in the making of them. To work and attend to the engines some fifty or sixty persons are required: more employment is given in damping and preparing the huge stacks of paper for printing. The manufacturing of the paper, too, has been another means of providing labour. Then there are the compositors, numbering over thirty; preparers of box-wood, artists, and engravers. As regards the latter, although a number are employed on the premises, so many of the blocks are cut by various engravers at their own homes that it is not easy to get the exact number who are in this way employed; but we think that it is far within the mark when we put the number of draughtsmen and engravers at 20, who are required to produce each week's illustration. Besides these are editors and writers, a large staff for publishing, and other business arrangements; preparers of printing ink, electrotypers, &c.

If we glance at other great printing establishments of the metropolis,—at the *Times'* and the Queen's printing-houses, the offices of the various daily and weekly newspapers, at the office at which this journal is printed, for example (Messrs. Cox & Wyman's), which is amongst the oldest of the printing establishments; the printing offices of Messrs. Petter and Galpin; at Mr. Stiff's—the place where the enormous impressions of the *London Journal* are thrown off,—at the great towns of the provinces, where also printing operations are going forward which are extraordinary for their extent, and which are constantly increasing;—we shall find that the immense army of workers who are in this way engaged are paid good wages, which with care enable them to support a respectable position: and contrasting the wonders which have been done, the present great and constantly increasing numbers who in this way find employment, and the early condition of the art, it must be plain that the application of steam power to the printing press, while it has been a blessing to the world at large by the dissemination of knowledge and the cultivation of mind, has provided fresh means of remunerative employment for thousands.

ETCHING.

ORNAMENTATION on metals, glass, and porcelain, has come into considerable use; and, believing, as we do, that such work would not only be pleasant to amateurs, but might also be useful to others, we think that a few brief and practical notes on the subject may not be out of place.

First, as regards copper-plates—which in many respects have an advantage over steel for the use of amateurs,—procure a thin plate, properly polished on the surface, at any of the regularly established coppersmiths. These can be had of the size of several feet down to a few inches. The surface of the plate being bright and free from tarnish, remove all grease with great care by washing with spirit of turpentine and then rubbing with very fine whitening and wash-leather. Care must be taken not to scratch the plate.

Having got rid of all grease, fix a hand-vice to one corner or some other convenient part of the plate; it is then ready for the reception of the etching-ground—a preparation chiefly composed of asphaltum, pitch, and virgin wax: there is, however, a great art in making this sufficiently plastic, so as to admit of its being properly spread upon the plate when heated. It is better for ordinary purposes to purchase it at the coppersmith's or tool-shop, where a supply can be had for about 1s. A dabber, for the purpose of laying the ground on the plate, is also necessary. This

is of a mushroom shape, and composed outwardly of very fine silk or kid leather, free from grease: the inside is padded with wool. This can be readily made by any person who has seen one of them. In order to prevent any grit or impurity which may chance to be in the etching-ground, it is better to tie it in silk. For the purpose of heating the plate, a hot iron, or a spirit-lamp, placed below an iron frame on which the plate may rest, or other contrivance, may be used. Care is to be taken to make as little dust as possible. The metal must not be allowed to get too hot, for that would burn the etching-ground, and prevent it from sufficiently resisting the acid. The plate being of a proper heat, by drawing the etching-ground over the face, a small quantity will be lodged upon it. This in the first instance is uneven; but, may be spread in a flat, thin, even manner. Every part must be covered by the ground, or else the acid would leave such places as are bare liable to be corroded into holes. The ground, when this is spread on the surface, is of a light brown colour, so delicate, that it is difficult to see any pencil outline which might be transferred, or properly to see the scratches made by the etching needle. In order to darken this, it is necessary, while the plate and etching-ground are still warm, to smoke it by the flame of a wax-taper or candle. The flame must be kept moving about, and not allowed to touch the plate so closely as to burn the ground.

These operations, although simple, require some little practice and experience; and it is, perhaps, a good plan either to take a lesson or two in ground-laying, and the other parts of this process, from an engraver, or else to get one of this profession to lay the ground, and bite in the plate when etched.

The ground having been made ready, and the plate cold, an outline of the subject, prepared on ordinary or tracing paper, should be damped and transferred by means of pressure. The best way to manage this is to take it to a copperplate printer, who will do it effectually for a few pence: for those living in the country where such convenience cannot properly be had, this transfer can be made by one of the ordinary letter copying-machines, or by going very delicately over the back of the outlines with a pencil or other instrument which is not too sharp.

This having been done by means of an etching-point, which can be had at the tool-makers, the design can be readily scratched upon the plate. Attention is needed to mark the lines quite through the ground. The hand should also be prevented from coming in contact with the ground, and all unnecessary scratches be carefully avoided. This may, to a considerable extent, be done, by forming a bridge of a flat ruler, supported by pieces of card-board or folded paper.

Wherever the etching-ground has been passed through by the etching-needle, that part is liable to be eaten into a line by the application of acid: on no other portion, however, if properly done, should the acid work.

It being necessary to cover the etching with an even depth of diluted acid (from a quarter to half an inch), in order to produce equality in the *biting*, it is needed to form a wall of wax round the margin of the work. The best material for this is bees-wax, with a small part of Burgundy-pitch added, and then the mixture boiled until the whole is well mixed. This, when needed for use, should be put into warm water, and then it can be readily raised round the plate and pressed down by the fingers, and after that more firmly by the handle of the etching-point, so that a sort of tank is formed, which will contain the acid as long as it may be necessary.

With the greatest care scratches may be made, or it may be necessary to erase parts, or the wax-wall may not be sufficiently tight. In order to remedy this, turpentine-varnish, or the ordinary "Brunswick black," used for stoves, may be employed, thinned to a proper extent by turpentine, and applied with a black-lead pencil.

For the purpose of "biting in" the plate, as the engravers call it, nitrous acid of the purest description should be mixed—one part of acid, and three parts water—which should be stirred up with a feather or pencil: soon the lines will be covered with minute globules; and, in proportion to the time the acid is allowed to remain, the etched lines will become thicker and deeper.

As a matter of course, in order to produce a delicate and refined effect a variety of thicknesses of line is desirable; and, although much can be done by the pressure of the point, by hatching, doubling lines, &c., it is in most cases necessary to allow the acid different times of action: for instance, it will be desirable to keep distant mountains and landscape thin, and to bring out the foreground by bold and deep lines. In order to manage this, the acid must be poured off into a vessel for further use, and then the plate must be well washed with clear water, and afterwards dried with a bellows or other means; then such parts of the etching as are of sufficient depth should be covered with the varnish in the same manner as the blemishes to which we have refered. This operation may be performed any number of times, each time washing and drying the plate: this must be also done when the biting is completed; and then, by gently heating the back of the plate, the wall may be drawn off, and by means of a little spirit of turpentine and oil the surface of the plate may be cleared of the etching ground. There are other operations, such as re-biting, re-etching (by touching with the graver), and by working with a point without the use of acid, &c. &c.: these, however, would require much space to describe, and this we will not just now do, as it is more particularly our object in mentioning the above to make operations which might be useful in many manufactures more readily understood.

In the same manner, but with the use of different acids, and on any scale, etching may be applied to steel, iron, brass, glass, and, lately, we are told, to porcelain. For steel, nitric acid very largely diluted with pyroligneous acid, until it does not taste much stronger than vinegar, is best. On brass we have seen diaper and other ornaments produced with great clearness and rapidity in the following manner. On large works, such as monumental brasses, experience has shown that in the biting, either by nitric or nitrous acid, before a great depth is got the biting of the lines is stopped by the formation of a black oxide, which it requires a very strong preparation of nitrous and sulphuric acid to remove and keep in solution; and this after a time proves too strong, and tears up the ordinary etching-ground: it has, however, been found that turpentine varnish, if allowed for a few days to harden, has a great resistance; and by the use of this when diapers, &c., are outlined, the raised parts may be painted with the varnish; and, when hard, the acid applied; and it is astonishing what good effect may be produced by these means. Large surfaces for the relief of foliage, figures, letters, &c., may, by this means, be executed with rapidity, either for filling in with coloured shellac or pigments.

The painting of these ornamental plates with varnish might be the means of affording employment to females, and probably the preparation of embossing, and otherwise ornamenting glass to be bitten by fluoric acid, might also be brought into far more extensive use than it is at present, and would also provide a certain amount of respectable labour for females.

AMENDMENT OF THE METROPOLITAN BUILDING ACT.

THE following is the whole of the "Act to alter and amend the Metropolitan Building Act (1855);" 23rd and 24th of Victoria, cap. lii. It refers, as will be seen, simply to the size of manufactories:—

"Whereas certain rules of 'The Metropolitan Building Act, 1855,' have been found to operate prejudicially by limiting the contents of buildings to be erected as workshops for the manufacture of the machinery and the boilers of steam vessels, and as the increased and increasing size of such machinery and boilers for the royal and commercial marine of this country requires larger areas for their manufacture than are allowed by such rule, it is expedient to amend the said Act: be it therefore enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1. This Act may be cited for all purposes as "The Metropolitan Building Act (Amendment), 1860."

2. The rules of "The Metropolitan Building Act, 1855," limiting the cubical dimensions or contents of buildings used either wholly or in part for the purposes of trade or manufacture, shall not after the passing of this Act apply to any building to be used wholly for the manufacture of the machinery and boilers of steam vessels beyond the distance of three miles from St. Paul's Cathedral: provided always, that every such building shall consist of one floor only, and shall be constructed of brick, stone, iron, or other incombustible material; and it shall not be lawful for the owners, lessees, or occupiers thereof, or for any persons interested therein, to use such building for any other purpose than the manufacture of the machinery and the boilers of steam vessels, until all the rules and provisions of the said Act, as to party walls and other matters which are applicable to buildings of a similar character, shall have been duly complied with: provided also, that every such building, if of greater dimensions than 216,000 cubic feet, shall be subject to the approval of the Metropolitan Board of Works, in the same manner as iron buildings or buildings to which the rules of the said Act are inapplicable as set forth in the fifty-sixth section of such Act."

EXHIBITION OF MODERN PICTURES, MANCHESTER INSTITUTION.

THE annual exhibition of works of art in the Manchester Royal Institution is now open. The collection is one of average merit, including works by F. W. Hulme, Cobbett, Edward Davies, Lance, Hook, Egley, Duffield, Anthony, and Kennedy; and from many local artists, particularly Bostock, Brodie, Crozier, Henry Calvert, Duval, Gibson, Hayes, Keeling, Percy, Shields, and Whaite. The Exhibition further contains nearly 250 pictures by foreign artists, French, German, and Belgian. Amongst the artists contributing these we find Meissonier, Decamps, Chavet, Contare, Freer, Bossuet, Achenbach, Jordan, Steffeck, Becker, and others. We should like to know under what circumstances these foreign pictures are obtained.

The council of the Royal Institution have left the management to the local artists, and Messrs. W. Percy, J. Keeling, R. Crozier, H. C. Mitchell, and H. Calvert have hung the pictures.

The general price of admission is, as usual, 1s.; but two new features have been introduced into the arrangements, one day per week (Thursday) having been set aside for the wealthier class of society at 2s. 6d., while strangers coming to town on the other days by railway excursions are to have admission at half-price.

What has become of Mr. Fairbairn's projected public gallery for Manchester?

WORKS IN FRANCE.

THE works of the first pavilion of the second block of the *Halles Centrales* are nearly finished, and it soon will be open for the sale of butchers' meat, by wholesale and retail, for which this compartment is specially reserved. Shortly the scaffolding will disappear from around it, and also the wooden sheds now standing on the site of the second pavilion. The second block is to be similar to the first, and will contain six pavilions connected by covered passages. A boulevart, planted with trees about 32 mètres wide, will separate the two blocks which will cover in all a surface of 40,000 square mètres. If we add to that all the passages and outlets, the whole area of this public market will be 80,000 square mètres, 8 hectares, or about 19·78 British acres.

The painter Decamps was killed by a fall from his horse on the 22nd ult., at Fontainebleau, and buried at the picturesque cemetery of that town on the 25th, with military honours in the form of a salute from the troops. He was an officer of the Legion of Honour.

The Solferino-bridge has just received its finishing touch of decoration. On the twelve blocks of Jura stone, which are espaced along the parapets of this bridge, are capitals likewise in Jura stone consisting of inverted consoles, surmounting a small frieze. The tablet, or shield, of the anterior portion of each capital, contains the names of the different victories obtained by the French army in the last French campaign.

The bridge constructed over the Garonne, at Bordeaux, by the "Midi" company, to connect it with the Orleans line, has been just terminated. On Sunday, the 5th August, a train starting from the "Midi" terminus, containing M. Surell, director of that company; M. Duvignaud, engineer-in-chief of government superintendence (*contrôle*); and Messrs. De Laroche, Tolay, and Regnault, engineers, who projected the structure, and under whose immediate superintendence it was executed, made a trip over the bridge, and came to a stand at the Orleans station. The aspect presented by this bridge is most noble. It crosses the river about 1,000 mètres higher up the river than the old bridge of stone, constructed under the First Empire: its length is about 500 mètres. The superstructure consists of boiler-plate, top and bottom webs, with diagonal bracing for the panels, resting on six piers, the bearings being about 75m. for the five middle spans, and 56m. 50c. for the end ones. Each pier consists of two hollow cast-iron columns, filled with concrete, and forced into the ground by compressed air. One of

these has been embedded to the depth of 22 mètres below the bed of the river, and stands 6 mètres over it, thus making a total height of 28 mètres. These cylinders are 3m. 60c. diameter. The apidity with which this immense structure was erected has not been equalled in Europe, it having been finished in two years. The old stone bridge of Bordeaux took ten years to build, with the assistance of the most experienced engineers of the Ponts et Chausées, all whose talent was required to overcome the extreme difficulty of the foundations, hitherto considered unsurmountable.

The town of Moulins (Allier), has been authorized to raise the sum of 100,000 francs, to be repaid by voluntary taxation in eight years, for the completion of the church of Saint Nicholas.

IRELAND.

THE inhabitants of Derry complain that the site of the new bridge has been removed, at a great expense, from that of the old bridge, for the reason that at the former place a rocky bottom had been discovered by the engineer; but that now the contractor can find no trace of those rocks formerly discovered, and has been obliged to purchase a very expensive pneumatic apparatus, which gave promise of enabling him to put down the foundations of the bridge.

One of the principal engineering establishments in Belfast is the property of the Messrs. Rowan, whose father was a native of Doagh, where the establishment was formerly located, and whence, in the year 1835, was sent out, on an excursion to Belfast, a locomotive for common roads, which passed through the streets of that town; but, like all the others which have hitherto been invented, was found useless. Perhaps the Scottish nobleman who is now experimenting in the north may succeed better.

It appears, from the half-yearly report of the Belfast and County Down Railway Company, recently submitted to the shareholders, that the gross earnings of the railway for six months was 16,047*l.* 8s. 3d., and expenses 7,335*l.* 0s. 9d., leaving a sum of 8,712*l.* 7s. 6d., of which 6,628*l.* 16s. 6d. were required for payment of interest and preference shares, leaving a balance of 2,093*l.* 11s., which the directors recommended to be carried to the reserve fund. The works on the line from Newtownards to Donaghadee were reported to be progressing favourably, and that it would be opened for traffic early next spring. Also that the railway from Castledouglass to Portpatrick is being carried forward with the greatest possible energy, and will be opened for traffic in August next, and that the Government is proceeding with the improvement of the harbours of Portpatrick and Donaghadee, so as to render them suitable for passengers and mail-packet service.

The directors of the Banbridge and Lisburn Junction complain of the slow progress of their contractor.

The directors of the Dublin and Drogheda, and of the Dublin and Belfast Junction, are taking preliminary steps for the amalgamation of their lines, a matter which the shareholders in both should see carried out at the earliest possible moment. The amalgamation of Irish railways in the north would promote all interests.

The Church of St. Nicholas, Dundalk, is a new edifice, in the Early English style of architecture, consisting of nave and aisles, chancel and sacristy, having on the south side of front a bell tower 40 feet high, surmounted by a broached spire 80 feet in height, terminating with a Mediæval cross. The external walling is built with local granite—the cut stone dressings of white limestone. The internal arrangements consist of five bays of arches at each side, separating nave from aisles. The chancel has a five-light window. The roof is open timbered. The chancel floor is laid with encaustic tiles.

The loans and grants issued from the Exchequer for public works, drainage, and land improvement in Ireland, amount to no less than 10,036,071*l.* Nearly half this amount was advanced for county relief works during the famine, but that was remitted. The sum of 3,556,619*l.* for principal and interest has been repaid to the public purse, and there remains to be repaid 4,832,864*l.* The chief public works now being carried on in Ireland, under the supervision of the Board of Public Works, are, Kingstown Harbour, upon which 817,786*l.* has been spent, and Donaghadee Harbour (opposite Portpatrick), upon which 160,804*l.* has been spent, but both these works are nearly completed. There is also a female convict prison in course of construction, a new Landed Estates Court and offices, and the extension of the Four Courts.

REFORMATORIES AND REFUGES.

THE last report of the Reformatory and Refuge Union shows that there are now in Great Britain and Ireland no fewer than 172 reformatories, refuges, and industrial schools, more than 40 of which have been established since the committee commenced upon their labours in 1856. These institutions are capable of accommodating 15,000 inmates; and, from careful calculations lately made, aided by the Government inspectors' returns, it appears that there are, not including the institutions in Ireland, upwards of 11,000 boys and girls under preventive and reformatory treatment. These returns are exclusive of the penitentiaries and homes for females, of which there are more than 60, providing accommodation for 2,300 inmates.

The testimony of the Government inspector of certified reformatories is to the effect that there has been a reduction of 26 per cent. in two years in the number of juvenile offenders committed to prison, and this testimony is confirmed by the reports of the various institutions throughout the country.

But it is not alone amongst the criminal class that this progress has been made. The refuges and industrial schools for the outcast and the destitute, which led the way to the establishment of reformatories, have advanced with the same rapidity, the one acting on the other, and both in their places tending to the accomplishment of the one great design.

One thing is to be noticed in connection with the present working of refuges and industrial schools, — more attention is paid to fitting the children for their future occupation in life than, as formerly, to the mere amount of work.

SOMETHING REQUIRING EXPLANATION.

WE find the following in the *Nottingham Guardian*:—"A recent case in our local Bankrupt Court illustrated, as we took care to show, the custom of the building trade. It will be found, from the subjoined report, that the Nottingham builder was more fortunate than his Lancashire brother:—

'BANKRUPTCY COURT.—John Pooley, contractor and builder at Liverpool and Birkenhead, came up on Monday to receive judgment on his application for a certificate. Amongst the objections urged by Mr. Martin on behalf of the assignees, was one that the bankrupt had, at the instigation of an architect in this town, added the sum of 100*l.* to his original estimate for building a church at Birkenhead, and had thus been a party to defrauding the trustees for the erection of the church. Mr. Evans, who appeared for the bankrupt, said if there was really anything in the objection he thought the court should be in possession of all the particulars of the case, as what had been done by his client, he was informed, was almost a universal practice, and he contended that the transaction, if it had taken place, had nothing whatever to do with his conduct in that court. If the bankrupt had knocked a man down and robbed him of 100*l.*, that court could take no cognizance of it. Mr. Martin said that certainly would not be "conduct of a trader," but in the case before them he could clearly show that the bankrupt's creditors were damnified by the transaction, and he should now ask the court for an adjournment, to have the architect present and examined. His Honour adjourned the sitting till the 11th September.'."

THE ARRANGEMENT OF A KITCHEN.

Now that gastronomy is carried to a state of great perfection in this country, and we may fairly vie with our Gallic neighbours in the art of dining, I venture to trouble you with a few remarks on the proper arrangement of kitchens and the offices connected therewith.

In first-class buildings, whether for public or private occupation, the kitchen often has not sufficient of the architect's care in its details. It is generally too small, ill ventilated, and totally inefficient to meet the ordinary requirements. Let me now briefly describe what, in my opinion, is necessary to complete a first-class kitchen. The chief thing to consider, then, is situation. A kitchen should never be constructed in the middle of the basement, but always built out from the principal walls, so that a large skylight may be placed in the ceiling, and which should be constructed so that it may be opened or shut at pleasure. Large air-drains should be built under the stone-paved floor, with iron gratings for the admission of air, which air should be in all cases taken from the external wall, to ensure a free circulation. The doors leading to the main building should be made with springs, to swing, so that they may always be kept closed, and prevent any unpleasant smells from penetrating into the house, and the walls should be covered with plain white tiles, from the ground to the height of 8 or 9 feet. Of course the size of the kitchen must depend entirely on the space at disposal; but the height should never be less than from 15 to 18 feet.

Presuming that we have a building of the kind described, let us now consider the cooking apparatus. In the first place, it is highly necessary to have a good open roasting-range, with a smoke-jack over it. Much controversy has taken place as to the relative merits of roasting by gas; but I am quite satisfied, from experience, that the *so-called* roasting by such means is not to be compared with the old-fashioned plan. Meat cooked in a gas oven becomes highly impregnated with the carbonic acid, however much the oven may be ventilated, and is not to be compared, for flavour, with meat cooked by an open fire. The roasting-range should be situate in the middle of either of the walls which may be best adapted for carrying up the flues: the flue for the range-fire should not be less than 18 inches square, and invariably carried to the highest point of the main building. A range 6 feet wide, and 3 feet 6 inches high, is a very good size, and ample for all purposes. The back should be built of fire-bricks (Newcastle bricks are the best), and should not exceed 7 inches in depth from back to front. This will ensure a good bright fire, giving an intense heat with a small consumption of coal.

On one side of the range, the broiling-stoves, 2 feet 9 inches to 3 feet wide at top, should be placed, one, two, or three in number, as circumstances may require. These should have a separate flue to the top of the house, to ensure a quick draught. At the end of these stoves, a Bainmarie, heated by steam, for gravies and sauces, and next to this a good-sized hot closet, also heated by steam, for the reception of the viands after being dressed at the stoves, and to keep the plates and dishes hot while waiting to be served up. On the other side of the roasting-range there should be a large baking-oven of cast iron, and not less than 1 inch in thickness, for pastry, &c., with a good-sized wrought-iron closet over, heated from the same fire. The flue for this oven might be taken into the roasting-range chimney; but where there is convenience, a separate flue is preferable. Against the opposite wall should be fixed a series of three or four charcoal stoves, for preparing the lighter and more delicate ingredients. Here a good gas-burner may be introduced to advantage: those which burn atmospheric air with the gas are the best, as they give an increased heat without soiling the stewpans. This gas stove may be used, among other purposes, for preparing the stock for soups, as the heat can be regulated so that the stock-pot may be left on all night. A steam Bainmarie-pan, for sauces and soups, is requisite at one end of this series. As near as convenient to these a good substantial hot-plate, with an oven on the top, heated from the same fire, should be placed. This and the charcoal stoves would be chiefly under the control of the principal cook. When the dining-room is on the floor above, a lift to wind up the dinners, joints, &c., is a most useful adjunct, as it saves a great deal of labour in carrying dishes up and down stairs. The lift should be as near as possible to the kitchen, but not in it; and a steam table, with closet under, should be near the lift, to keep the prepared dishes hot previous to their ascent.

In the middle of the kitchen there should be a large table, with a good oak top, 3 inches thick, with drawers under for general use: one or two copper kettles, heated by steam, for boiling fish, and, conveniently situated, will complete all that is really necessary here.

The scullery should open into the kitchen, and should contain a hot-plate for boiling and preparing the vegetables, steam-kettles for meat, potatoes, &c., and double troughs, with hot and cold water laid on for washing plates, dishes, preparing and cleansing vegetables, &c., and a sink. Here, also, the boiler for generating steam might be fixed. The size, of course, depends upon the quantity of work it may have to do, and which, in addition to the steam fittings in the kitchen, might be used to keep a closet hot just outside the dining-room. This latter is a most necessary article; for, with all the pains the cook may take to send up the dinners hot, if they have to wait for five or ten minutes before they can be served, they soon become cold, and give dissatisfaction. An abundant supply of hot and cold water to kitchen and scullery is most essential, and for the former a large galvanized iron tank should be placed near the ceiling, with a coil of pipe inside, through which steam passes from the boiler.

In the pastry-room great attention should be paid to situation. It should, in the first place, be as cool as possible, with a window having a northerly aspect, and freely ventilated. This should contain a large marble slab, good pestle and

mortar, ice-drawers, and cupboard for sundries. The larder may be next to the pastry-room, should be lofty, with a rack and hooks dependent from the ceiling, for hanging joints, a table in the centre for prepared meats, and a large wire-work safe for protection against flies in summer, a good-sized weighing-machine, an ice-safe, and plentiful supply of ice, &c. Of course, in the foregoing arrangements, considerable modifications and alterations may always be made. Club-houses or large hotels require more fittings of one class and less of another than a gentleman's mansion; but what I wish chiefly to call attention to is this,—that in the latter, in nine cases out of ten, the cook is expected to perform wonders in a small, dark, ill-ventilated kitchen, where a little oven and boiler-range, and perhaps a very small hot-plate, complete the usual amount of apparatus in what are called first-class mansions. I think a little more care in the arrangement, and a few extra pounds spent in this department, would not be altogether money wasted. The cook would be better able to keep his or her temper, and the major domo would get a better dinner. J. D. A.

NOTES CONCERNING THE ORIGIN OF PARISHES AND PAROCHIAL CHURCHES.

PARISHES were first distinguished in England under Honorius, Archbishop of Canterbury, about the year of Christ 636.—"Camden's Brit." clxix. ed. 1695.

Ridley, in his view of the civil and ecclesiastical law, tells us that fonts, in the primitive times, were not in churches, but the custom of those elder ages was to baptize in rivers and fountains; and that custom being discontinued through persecution, fonts were erected in private houses; and in more peaceful ages they made bold to build their fonts at a little distance from the church. Afterwards they obtained leave to set them in the church porch. At last they got them into the church. But they were not placed in every church immediately; for at the first they were found only in the cathedral church, where the bishop resided; and, though service might be said in the lesser minsters and rural churches, yet the right of sepulture and baptism belonged to the cathedral church, unless it were a case of necessity. It was therefore called the *mother church*. In succeeding ages, when it was found that the mother church was too far distant from some villages, and so situated that in the winter the people could not repair thither, consideration was had of this inconvenience. The bishop took occasion hence to transfer the right of baptism and sepulture to the rural churches; and this, together with the right of tithes, made it a parish church of that kind which we have now. But, because also in some parishes many families lived so remote from the church that they could not conveniently frequent the same, it was indulged to such that they might build a private chapel or oratory in or near their mansion-places, reserving for the most part the right of baptism and sepulture to the parish church, which, in respect to these lesser oratories, was to be accounted the baptismal or mother church. It was also provided that these families (notwithstanding their grant from the bishop for a private oratory) should, upon more solemn feast days, repair to their parish church. These private oratories were afterwards called *capellæ*, chapels.—(Thus Ridley).

Now the word "capella," *quasi* "capsella," is a derivative from capsa, which signifies a chest, or coffer, because the relics of saints and holy persons were kept in such chests; and the places where such chests were kept were also called *unde nomen* capella, capellanus, &c. So Spelman in his glossary upon that word.

Dr. Prideaux says, "none might of right build oratories without license of the bishop; at least, none might administer divine service there without the bishop's special license.

Oratories erected in the houses of great persons I should call domestic chapels. When built by one or several persons in some convenient place for the use of several families, or of a township or townships, not having liberty of baptism or burial, I call such chapels of ease.

When built by a more numerous multitude of the neighbourhood, consisting of one or more villages, having got liberty for baptism and burial, with consecration thereof by the bishop, and sometimes an allowance in money or tithes from the mother church, I call such parochial chapels; for these have all the rites and ceremonies as the mother church or parish church hath, except the tithes; so that, indeed, they are lesser parishes, created within the greater, for the benefit of the neighbourhood."

As to the consecration of churches, we find that the Jews had their feasts of dedication of their temples (John x. 22; Maccab. iv. 59). But there is no dedication of our Christian churches to saints until praying to saints was in use; and after churches began to be dedicated to saints, their dedication feasts were usually kept on that day which was the feast-day appointed in the calendar for commemoration of that saint to whom such church was particularly dedicated. This time was called by us the wakes, from waking, because at such times the people prayed most of the night before such feast-day in the churches.

The saint's bell, as many admit, was not so called from the name of the saint which was inscribed on it, or of the church to which it belonged, but because it was rung out when the priest came to that part of the service, "Sancte, Sancte, Domine Deus Sabbaoth," purposely that they who could not come to church might understand what a solemn affair the congregation were at that instant engaged in; and so, even in their absence, be once at least, moved to lift up their hearts to Him that made them. For this reason the saint's bell was generally hung where it could be heard the furthest, sometimes in a lantern at the top of the steeple, or in a turret at one corner of it, if a tower; and sometimes in an arch or gallery, on the outside of the roof, between the church and chancel. This last sort was so placed, that the rope might come down into the choir, and so being near the altar, the bell might be more readily rung out as soon as ever the priest came to the sacred words.

As regards the position of churches, Dr. Plot believes, that in the setting of their churches due east and west, all the direction which people had in former times (till the compass was discovered), was from the sun itself, which rising in summer more or less northward, and in winter proportionately to the southward of the equinoctial east, in all likelihood might occasion so many churches not to respect the due east and west points, but to decline from them more or less according to the late or early season of the year wherein they were founded. A. B.

BATTLEFIELD CHURCH, NEAR SHREWSBURY.

MORE than once we have mentioned the deplorable condition of Battlefield Church, near Shrewsbury, and the claims it has to attention. We are glad to be informed that the church is now undergoing complete repair, under the auspices of Mr. Pountney Smith, architect. A considerable sum having been subscribed by the county towards the restoration, Lady Brinckman, of Sundorne Castle, Shrewsbury, has undertaken the remaining expenses, and her ladyship has further instructed Messrs. Lavers & Barraud to fill the windows with painted glass.

RE-DECORATION OF ST. PETER'S CHURCH, MANCHESTER.

THE interior of this church has undergone a complete re-decoration, and was opened for Divine service on Sunday last. The body of St. Peter's Church, as it now stands, was erected in 1794, from a design by James Wyatt, and is a modern example of the Tuscan or simple Doric order of architecture. The steeple, which was added about thirty years later, was designed by Goodwin, the architect of the Manchester Townhall. In the new decorations Christian symbols (the Cross, the Lamb, the Dove, the Trinity, &c.) have been introduced into the ceiling and other parts. Texts of Scripture, in the English and Greek character, have also been inscribed on the frieze. The altar recess is elaborately treated, and, in addition to other improvements, the hitherto empty niches, four in number, have had statues placed in them, executed by an Italian sculptor, of St. Peter, St. Paul, St. James, and St. Andrew; whilst the eight oval panels on the side walls over the niches and the galleries are filled with paintings in monochrome, representing scenes in different periods of our Saviour's life. These are studies from pictures by various masters, and comprise "The Infant Saviour," Murillo; "Christ Blessing Children," Overbeck; "The Raising of Jairus's Daughter," Von Holst; "Christ Weeping over Jerusalem," Eastlake; "The Transfiguration," Raffaelle; "Christ's Agony in the Garden," Le Jeune; "Bearing the Cross," after the celebrated altar piece at Magdalen College, Oxford; and "The Comforter," Ary Scheffer. The propriety of introducing colour and ornament in buildings of this kind is now generally admitted. The altar piece in St. Peter's is by A. Carracci, or of that school, and is said to have been bought in Paris at a cost of 1,000 guineas. The organ case, designed by Mr. E. Salomons, of this city, has had the mouldings and enrichments brought prominently out in gold, and the front pipes, which are of pure tin, highly burnished, have been decorated about the mouths in gold and colour. One of the semicircular windows has been decorated with stained and painted glass by Messrs. Edmondson & Son. The subject represents Christ's charge to Peter,—"Feed my sheep." The whole of the details and decorations of the church have been effected by the firm of Messrs. Samuel Bottomley & Sons, of Crosshills, Craven, Yorkshire.

SCHOOL-BUILDING NEWS.

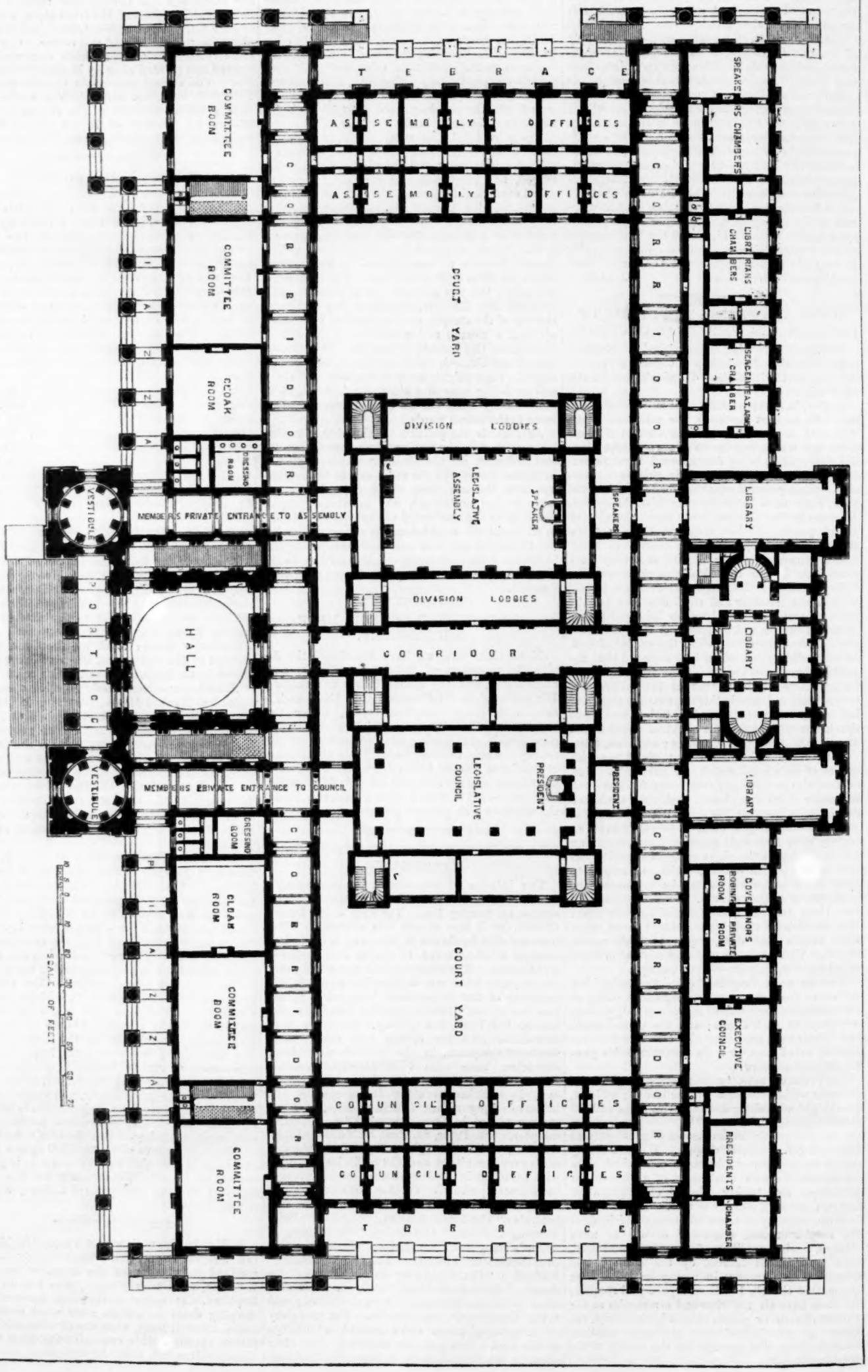
Twyford (*Hants*).—A range of buildings, embracing schoolrooms for boys and girls and a teacher's residence, are being erected by Mr. C Fielder, of Bar-end, Winchester, at this village, on a piece of ground forming an eminence in the lower part of it, the gift of Conway Shipley, Esq. The buildings, which are in a forward state, include according to the *Hampshire Advertiser*, a schoolroom for each sex, the dimensions of either being 30 feet by 17 feet, and adjoining these are class-rooms. The portions dedicated to educational purposes form the wings, the centre of the erection being the teachers' residence. The roofs are of high pitch, and are to be covered with slate and ridge tile of a geometrical character. The materials used are flint with blue mortar, and red and black bricks, with Bath stone window (in the Gothic style), copings, corbels, &c. The open timbers of the roof in the schoolrooms, &c., are to be stained oak colour. The architect is Mr. W. Coles (city surveyor, Winchester). The cost will be somewhat under 1,000*l.*, and is to be defrayed by voluntary subscriptions and a government grant.

Driffield.—The foundation stone of New National Schools, &c., has been laid at Kirkburn. The schools are from the designs of Mr. G. R. Smith, of Hull, architect, and Messrs. Malone & Simpson are the contractors. They include a master's residence. The buildings will cost about 800*l.*, of which 200*l.* will be contributed by Sir Tatton Sykes, the lord of the manor; 50*l.* by Archdeacon Long; 305*l.* by the Committee of Council of Education, and the remainder will be raised by the landowners and parishioners.

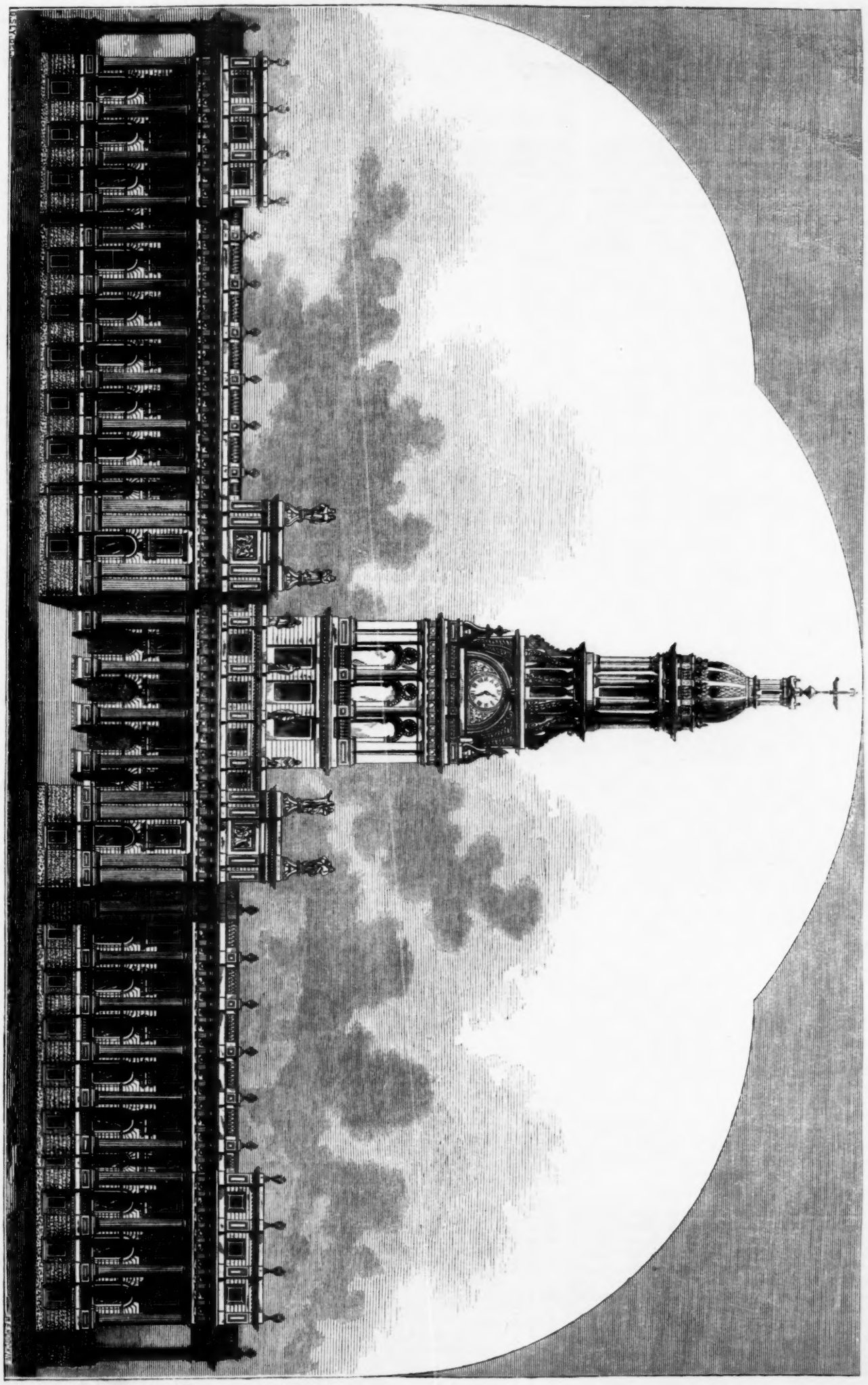
Manchester.—New Wesleyan schools have been opened at Newton Heath, according to the *Manchester Advertiser*. The building in style is plain. It consists of one large room on the ground floor, and open to the roof, through which the principal light is received, while on each side a smaller or anteroom is constructed, on the second floor. The estimated cost of the building alone was 700*l.* There is said to be an absence of all proper means of ventilation,—an indispensable requisite, especially where a large number of persons are congregated.

Kirkdale.—The first stone of the Kirkdale Industrial Ragged Schools and Church has been laid by the Earl of Derby. The exterior fronts of the building are to be plain brick and stone. The basement floor is planned for a cooking kitchen, which can be used for a soup kitchen during the winter months, and has a separate entrance from Major-street. Adjoining this kitchen is a flagged cellar, intended as a playroom during wet weather, or for workshop when required. The main entrance to the ground floor is from Major-street, to a schoolroom 80 feet long, 25 feet 6 inches wide, and 18 feet high; intended also to be used as a free church for the poor of the district. From this room there is a class-room, large workshop, and storeroom, covered lavatories, urinals, &c., and a large play-yard. The upper floor, which corresponds with the ground-floor, and which has also a separate entrance from Major-street, is intended for girls' schoolroom, class-room, printing-shop, and large workshop. The buildings and yard walls occupy an area of about 1,300 square yards, and as it is intended to erect them in as plain a manner as possible, the estimate for the same, exclusive of land and general fittings, will not exceed 2,000*l.*

A MAN'S HEAD SAWN IN TWO.—On Monday Mr. William Payne, the coroner for Southwark, received information of the death of Jeremiah Kellimer, aged twenty-seven, who had lived at Deptford. It appeared that the deceased was stooping down to collect some wood dust at a steam saw-mill there, when the circular saw completely cut his skull in two. He was taken to St Thomas's Hospital, where he expired.



HOUSES OF PARLIAMENT, MELBOURNE.—*Plan of principal Floor.*



HOUSES OF PARLIAMENT, MELBOURNE.—MESSRS. KNIGHT & KERR, ARCHITECTS.

HOUSES OF PARLIAMENT, MELBOURNE.

THE site selected for the erection of the Parliament buildings is at the eastern end of the city, and commands a fine view of the town, suburbs, and adjacent country. The Blue Mountains of Dandenong and the shipping in Hobson's Bay are plainly seen from the upper windows, while the entrance at Port Philip Heads can also be discerned through the clear Australian atmosphere. The new Treasury, a costly and elaborate building, is in close proximity to the Houses of Parliament. Extensive offices for the chief secretary and executive, the foundations of which buildings have cost 32,000*l.*, are also in the vicinity of the senate house: the eastern end of Melbourne will, therefore, in antipodean position, agree with the western end of London.

The spirit of "fastness" which characterises most of the colonial proceedings does not apply to the progress of the building in question: the portions at present erected are the two Legislative Chambers and the Library, which occupies about a third of the eastern elevation.

The Legislative Chambers are each 72 feet long, 40 feet wide, and 40 feet high. Division lobbies are attached, but the number of members—seventy-eight for the assembly and thirty for the council—being comparatively small, the lobbies are also used for committee rooms. The Corinthian order has been employed for the "Upper" and the Ionic for the "Lower" house: both Chambers are elaborately decorated.

The style and treatment of these apartments have received commendation. The building, when complete, will be about 400 feet long, 220 feet wide, and 74 feet high. The principal order employed for the exterior is the Roman Doric. The Library, now in course of completion, contains a central hall 40 feet square and 40 feet high; two reading-rooms, each 50 feet by 25 feet; and numerous private rooms. The refreshment-rooms are in this part of the building, and comprise two saloons, each 50 feet and 25 feet; smoking-rooms and other accessories.

Messrs. Knight and Kerr are the architects appointed by the Government to carry out the work.

It is understood that the urgent necessity for new executive and treasury buildings referred to above has caused the commencement of the grand front to be postponed longer than was at first intended. It will now, however, we believe, be commenced immediately. The material to be employed is a Colonial stone, called New Darley, and is somewhat of the colour and texture of that used in our own Treasury buildings. The part already completed is of basalt, termed in Australia, "blue stone."

Mr. Knight, as president of the Victorian Institute of Architects, last year, read a Treatise on "Colonial Building Stones," which was afterwards published, and was noticed by us at the time. In this he speaks as follows of the bluestone:—

"Basalt is spread over a large area of the country, and is the most abundant of all our materials. The stone is too well known to need any technical description: its durability is unquestionable, but its suitability for works of much architectural pretension is generally doubted. In my own practice I have been a great friend to bluestone, but the result of my experience has somewhat altered my opinion of this material, and I am now inclined to the belief that it is unfitted for any public edifice where the design embraces a moderate amount of architectural embellishment.

I fear there is a disposition to tax bluestone beyond its capacity, to produce architectural effects. In Melbourne, thousands of pounds are almost wasted in working delicate mouldings upon this material, such details in many instances being scarcely visible. I have not been free from the committal of this error, but hope to avoid falling into such mistakes in future, for I hold it to be an anomaly to spend 10*l.* worth of labour in working a moulding or enrichment which does not pay for the outlay in gratifying the taste to a proportionate extent. We attach a certain idea of beauty to the form of a particular moulding, which beauty is derived partly from the contour of the figure, and partly from the play of light and shade upon it. Now, the colour of bluestone destroys the proper effect of shadows: they are to a great extent absorbed by the stone, instead of reposing distinctly upon it; and, as a natural result, the beauty, proportion, and character of minute enrichments in basalt are comparatively lost, when contrasted with stones of more appropriate colour. While suggesting the exceptions to be made in the use of bluestone, it must be admitted that for ordinary purposes, both in architectural and engineering works, no other material could be so generally employed: for foundations it is eminently suitable: for stores, its sombre hue imparts an appearance of commercial as well as structural solidity: for ecclesiastical buildings, if relieved by freestone dressings, it can be used in a cheap and most effective form; while, for engineering works, its moderate first cost, and the facility with which it may be cut into plain forms, leave no occasion to wish for a better material. There is absolutely no waste on bluestone: the smallest chippings are valuable for road making; and, when we further consider the abundance of the supply, and the trifling cost of quarrying it, for ordinary purposes, we may safely say that bluestone is one of the most useful of the mineral products in Victoria.

It may be asked, if I think so much of basalt, why seek to employ another stone in the erection of the Houses of Parliament?

I confess to feeling very great reluctance in making any exceptions to the employment of bluestone; because, from the nature of its formation, there can be no doubt of its durability. It is more indestructible than granite, not one-third as costly, but, perhaps, not a third so beautiful as that material. In instance of the durability of bluestone, I would refer to the steps at the entrance to the Government Offices, in William-street, where they will be found to be less affected by time and wear than those which are of colonial granite.

My principal reason for objecting to adopt bluestone for the external elevations of the Houses of Parliament I have already given in the form of a general proposition—that the colour of the material is unequal to the production of those ordinary effects of light and shade which are essential to realize the spirit of classic architecture; and, if the utilitarian proposition be not regarded as untenable, that the money spent upon the execution of architectural details should produce a feeling of satisfaction or pleasure in the mind of the observer proportionate to the amount of the outlay incurred; then I say that ornaments wrought in basalt will not come up to such a standard of comparison; and, under these circumstances, the expenditure of large sums of money in attempting to delineate minute features is a waste of capital and a misapplication of the abstract forms of beauty in architecture.

If the known durability of bluestone is to be regarded of greater moment than any objections to its colour, let us use it with discretion; let the treatment of the orders be simplified to suit the material; and although such an innovation would detract from the acknowledged standard of correctness, the loss in this respect will be compensated by the saving in cost effected through the omission of those enrichments which show but vaguely on such a gloomy stone."

STRENGTH OF BUILDING STONES.

THE following table (showing the specific gravity of colonial and other building stones, the force required to crush 1 inch cubes, the amount of disintegration caused by the action of sulphate of soda, taking 1,000 as an indication of perfect resistance, and the weight per cubic foot), is from Mr. Knight's treatise mentioned in our notice of the Melbourne Houses of Parliament:—

Colonial Stones.	Specific gravity.	Crushing force per square inch.	Amount of disintegration.	Weight per cubic foot in an ordinary state.	Weight per cubic foot after four hours' immersion in water.
		In lbs.		In lbs.	In lbs.
Darley sandstone	2,350	2,118	·880	124 7-16	132
Bacchus Marsh sandstone	2,213	1,949	·260	124	133 5-16
Geelong sandstone	2,207	2,150	·600	136 11-16	138 10-16
Kyneton sandstone	2,250	—	·600	131 7-16	135 11-16
Kilmore sandstone	2,423	3,100	·659	—	—
Bulleen sandstone	2,484	2,100	·750	142 9-16	147 4-16
Doncaster sandstone	2,497	3,163	·800	—	150
Plenty sandstone	2,455	3,200	·500	146 13-16	150 3-16
Portland (western district) limestone	2,503	3,065	·700	—	—
Warrnambool limestone, a picked specimen, hardened by salt water	2,438	5,035	·800	—	—
Cape Schank limestone	2,580	3,550	·600	—	146
Ballan sandstone	2,446	2,450	·800	—	—
Keilor sandstone	2,477	1,600	·300	145 11-16	149 10-16
Western Port sandstone	2,357	5,400	·500	148 8-16	149 5-16
Apollo Bay sandstone	2,473	Tested up to 6,720 lbs. without producing any effect. The machine was inadequate to go beyond this weight.	1·000	—	—
Bluestone (basalt)	2,625		—	—	163 7-16
Granite from the Plenty	2,655		1·000	—	—
Sienite from Gabo Island	2,652		1·000	—	—
Templestowe clay slatestone	2,600		1·000	—	—
Mount Sturgeon sandstone	2,386		1·000	142 12-16	144
Intercolonial Stones.					
Pitfield's New Kangaroo Point sandstone from Tasmania	2,207	2,956	·900	132 3-16	134 9-16
Kangaroo Point stone, old quarry	2,252	2,881	·050	135 5-16	137 2-16
North-west Bay sandstone, from Quinn's quarry, Tasmania	2,322	2,929	·700	140 9-16	143
Huon river sandstone, Tasmania	2,417	—	·001	—	—
Sydney sandstone	2,237	2,228	·300	—	—
Adelaide sandstone	—	2,800	—	—	—
Adelaide marble	2,715	Tested up to 6,720 lbs. without effect.	1·000	—	167 5-16
Stones from Europe.					
Fifeshire sandstone, Scotland	—	1,814	·100	128 3-16	136
Bath oolite, England	2,241	1,600	·800	124 14-16	126 6-16
Portland oolite, England	2,447	3,135	·950	137 2-16	140 9-16
Park Spring sandstone, from near Leeds, G.B.	2,383	Tested up to 6,720 lbs. without producing any effect.	1·000	—	148
Caen, Normandy	2,076	1,543	·700	134 5-16	136 4-16
Carara marble	2,713	Tested up to 6,720 lbs. without producing any effect.	1·000	166	—

Table showing the Weight required to crush inch Cubes of the four Building Stones principally used in Melbourne:—

	Crushing force per square inch when dry.	Crushing force per square inch after four hours' immersion in water.	
	In lbs.	In lbs.	
Pitfield's new quarry at Kangaroo Point	2,956	1,919	31½
Pitfield's old quarry at Kangaroo Point	2,881	1,428	50½
Darley	2,118	1,260	35½
Bacchus Marsh	1,949	1,073	45

The above results are derived from the average of four samples of each stone in a dry and two of each in a wet state.

Experiments to prove the fitness of the following stones to act as lintels, &c., tried on scantlings 4 inches by 4 inches, having a span of 4 feet, and the entire weight suspended from the centre:—

	Breaking Weight. cwt.	qr.	lbs.
Fifeshire (Scotland) sandstone	1	1	26
Bath oolite (English)	2	2	20
Kangaroo Point white sandstone (from Pitfield's new quarry, Tasmania)	2	2	20
Kyneton (Victoria) sandstone	2	2	21
Kangaroo Point sandstone (Pitfield's old quarry)	2	3	20
Bacchus Marsh sandstone (Victoria)	2	3	24
Darley sandstone (Victoria)	3	0	2
Bulleen sandstone (Victoria)	3	2	0
Doncaster sandstone (near Bulleen)	3	3	20
Geelong (Barrabool Hill) sandstone	4	2	20
Portland limestone (English)	6	0	20
Park Spring sandstone (from England, near Leeds)	9	3	6
Adelaide marble	10	1	11
Colonial basalt	13	0	2
Mount Moriar (near Geelong)	4	3	15

Table showing the comparative Cost of certain Descriptions of Masonry.

	Description of Stone.	Price per Foot.	Price of Labour per Foot.
		s. d.	£. s. d.
1	Granite	8 0	1 2 6
2	Marble	10 0	0 8 6
3	Mount Sturgeon freestone	7 10	0 6 10
4	Bluestone	3 6	0 9 9
5	Bacchus Marsh or Darley stone	6 6	0 4 8
6	Portland from England	5 6	0 5 6

Memo.—The prices of all these materials include delivery at Melbourne. The prices of labour provide for the same amount and description of work being put upon all the different stones. The various prices of labour (with the exception of granite) are taken from actual tenders. The price of working granite is founded on the ascertained cost of dressing samples of that material. All the prices are calculated for large-sized blocks.

PROVINCIAL NEWS.

Northampton.—There is now no doubt, says the local *Herald*, that a new townhall will be built. Ample premises in St. Giles's-street have been secured for a building worthy of the town and equal to its requirements; but, before the plans are decided upon, it is requisite that a clear understanding should exist as to what those requirements are. The writer then points attention, amongst other requisites, to the importance of making provision for the adoption of the "Free Public Libraries and Museums Act."

Nottingham.—We are asked to state that the carving at Messrs. Wright's Bank, recently illustrated in our pages, was executed by William Sheriton, of that town.

Derby.—The following particulars relate to tenders received by the local committee for works connected with the formation and completion of the proposed new cattle-market in the Holmes, and published in the local *Advertiser*. It was agreed that the tenders here specified should be recommended to the council for their acceptance, viz.: Division No. 1. Bridge over Canal, &c., 720*l.*; by Mr. W. Hyslop.—Division No. 2. Iron Castings, &c., 764*l.* 13*s.*; by Messrs. J. and J. Cliff, of Bradford.—Division No. 3. Materials and labour in constructing and completing market, &c., 3,021*l.* 16*s.* 9*d.*; by Mr. Jos. Tomlinson. The above form a total of 4,506*l.* 9*s.* 9*d.*, being 57*l.* 14*s.* 9*d.* under the estimate (4,564*l.* 4*s.* 6*d.*) of Mr. Thorburn, the borough surveyor. A further tender of Mr. Hyslop's for Division No. 4, being for the making of the road on the north-east side of the river, amounting to 554*l.*, was also recommended to be accepted. The whole of these tenders make a total of 5,060*l.* 9*s.* 9*d.*

Ashbourn. — The committee of the Market Hall at Ashbourn had six tenders sent in for the projected market hall: Robinson, Belper, 1,625*l.*; Humphreys, Derby, 1,600*l.*; Thompson & Fryer, Derby, 1,557*l.* 15*s.*; E. Thompson, Derby, 1,500*l.*; Brinsley, Ashbourn, 1,480*l.*; Cooper, Ashby, 1,415*l.* Mr. Brinsley consented to reduce his contract to 1,435*l.*, and an agreement was made with him for that amount. Instructions were given for the immediate commencement of operations, under the superintendence of Mr. Wilson, the architect.

Birmingham.—The Corporation Baths in Woodcock-street have been opened to the public. The building is of red brick, and the elevation fronting to Woodcock-street has courses of various coloured bricks in the arches, cornices, and piers. There are separate entrances for men and women. The baths comprise, on the men's side, one hot and one cold first-class plunging bath, sixteen first-class private baths, and the same number in the second class. There is also a swimming bath, 80 feet long and 35 feet wide, with a depth of water of 3 feet 4 inches at the top end, 4 feet 6 inches in the middle, and 5 feet 6 inches at the lower end. On the women's side there are six first-class baths, and one first-class plunging bath, with eight second-class private baths. There is a waiting-room on each side, and the ticket-office is so arranged that persons of both sexes may apply at once, and yet be invisible to each other. The cold water comes from the pipes of the Water Works Company, and the hot water is supplied direct from the boiler, by a contrivance patented by Mr. Purnell, the superintendent of the Kent-street and Woodcock-street baths. Attached is a house for the resident engineer, and at the back are the necessary offices for washing towels, &c. The plunging and swimming baths are lined with Rufford's white glazed bricks, and the private baths are also of Mr. Rufford's manufacture. The margin round the swimming bath is laid with blue and red quarries, arranged in patterns. The want of the place seems to be a first-class swimming bath. The original plan, it seems, provided for such an arrangement, as well as for thirty-five more private baths. The architect is Mr. E. Holmes; and the contractors were—for the building, Mr. C. Jones; for the plumbing, &c., Mr. Whitworth; for the cisterns, boilers, and machinery, Mr. Middleton; for the engine and pumps, Mr. Dean.

South Shields.—The works for the building of seventeen additional cottages for the trustees and committee of the Master Mariners' Asylum, have been let to Mr. Heppell, of North Shields. The buildings have been commenced under the superintendence of Messrs. Oliver & Lamb, of Newcastle-on-Tyne, architects.

Shotley Bridge.—A townhall is about to be built at Shotley Bridge, and the directors have appointed Messrs. Oliver & Lamb, architects. The style of architecture adopted is Gothic. The building will be formed entirely of stone; and the centre projection will be surmounted by a clock turret, with a slated spire roof.

CHURCH-BUILDING NEWS.

Bromley (Middlesex).—It is proposed to erect a Congregational chapel and schools in Wellington-road, Bow-road. The style is to be Decorated Gothic, in white Suffolk bricks, and Bath-stone dressings, and coloured arches. The chapel will accommodate 780 adults, with galleries. There will be a tower and spire at the north end of the east aisle. Messrs. Morris & Son, of London, are the architects.

Eccles.—The first stone of the new church of St. James, at Hope, near Eccles, has been laid. The new church is intended to accommodate 640 persons, and is in total length, 132 feet; breadth, 57 feet; and height, 48 feet. The style is Gothic, of the thirteenth century. The plan consists of a chancel and a nave, with clerestory, and north and south aisles, divided from the nave by a double row of seven arches, deeply recessed on circular pillars. The chancel is one quarter the length of the whole, having the desk and pulpit on either side of its arch. It is flanked by an organ chamber, and by the vestry on the north and south sides, and, rising three steps from the nave, terminates with a case window, of five lights. The font is at the north-west door. The chief feature of the building will be a tower and spire, 160 feet high, disengaged from the church, except at the base, where it is joined to the north porch. The roofs of the church are open, with the rafters exposed; and the ceiling is of wood, covered with slates in alternate courses of blue and red. The main walls are Yorkshire pierrepoint, with dressings from the Storton quarries, Cheshire. The architect is Mr. Walter Scott, of Liverpool.

Birmingham.—The chief stone of the place of worship now in course of erection for Dr. Brindley, in Lower Gooch-street, has been laid by Sir J. Ratcliff. The building is to be erected by Mr. Griffiths, from designs by Mr. S. Hemming, and will stand at the corner of Gooch-street and Conybeare-street. It will be 86 feet by 60 feet; and, by arranging the pews in the fashion of an amphitheatre, space will be obtained for 1,000 persons. The plan includes school-rooms, arranged under the raised seats, and there will also be a vestry. The cost will be about 1,340*l.*

Bilbrough.—The parish church of Bilbrough, the last resting place of Thomas, Lord Fairfax, the Parliamentarian, has been re-opened, after a renewal of the inner fittings and furniture. The old pews have been replaced by stalls. An oaken pulpit and lectern replace, in new situations, the former pulpit and reading-desk. The total cost will be about 200*l.*, to be defrayed wholly by subscription. The designs were supplied by Messrs. Atkinson; the wood-work executed by Mr. Cook; the stonework by Mr. Wilson; and the painting and staining by Mr. Perfect and Mr. Poulter.

Halifax.—Several statues have arrived towards completing the decorations of All Souls' Church, Haley-hill, built by Mr. E. Akroyd. They are all for the exterior.

Tynemouth. — A correspondent informs the *English Churchman*, that three new churches are to be built in the parish of Tynemouth, Durham, in addition to the three already existing, so that the parish will comprise six incumbencies. The five new parishes will be endowed with 200*l.* per annum each. To carry out this plan, the Duke of Northumberland contributes the sum of 30,000*l.* The Ecclesiastical Commissioners will make a grant of a similar amount.

STAINED GLASS.

St. Mary's, Eynesbury.—A window, to the memory of the late Colonel Humbley, has been erected at the west end of this church. The window consists of three lights, with a figure of a Scriptural personage in each; and below each figure is portrayed an incident in the life of the person represented above. The figures represent David, Joshua, and Cornelius. Under the figure of David is David slaying Goliath. Under that of Joshua is represented an angel delivering his commission to that leader. Under the figure of Cornelius appears an angel speaking to the centurion. In the tracery, above the figures, are the three emblems of the Christian faith—the Shield of Faith, the Helmet of Salvation, and the Sword of the Spirit, each borne by an angel. This is the third memorial to this officer, which appears in this church. The execution of the work was intrusted to Messrs. Clayton & Bell.

Oldbury Church.—The parish church of Oldbury has had several memorial windows lately erected. The large east window is dedicated to the memory of the late Mr. William Chance, of Birmingham, who was a partner in the Oldbury Alkali Works, and represents the entombment, resurrection, and ascension of our Lord. The window is erected by Mr. Chance's family and the inhabitants of Oldbury. The ten clerestory windows have been similarly dedicated by Mr. Dugdale Houghton, of Birmingham, to the memory of his father, and represents the four Evangelists, together with other designs. The whole of the glass is from the glassworks of the Messrs. Chance, at Spon-lane, and from the designs of Mr. S. Evans, M.A.

Gloucester Cathedral.—We stated some time ago (says the *Gloucester Chronicle*) that the Dean and Chapter contemplated the restoration of the magnificent east window of the cathedral, and with that view had obtained designs from several of the most eminent manufacturers of stained glass. The designs were exhibited at the cathedral, and naturally excited considerable interest. We now learn, however, that the intention of carrying out either of these plans has been abandoned, we believe at the suggestion of the *savans* who lately visited this city, and who stated that the window contained one of the largest collections of ancient glass to be found. A scaffolding has been erected, and the window will be repaired, the old glass being preserved in its present state.

Church of St. Peter-Port, Guernsey.—The Lieutenant-Governor Slade's gift of stained glass for the St. Peter-Port Church has been inserted in the oriel of the south transept. The subject is the Lamb, surrounded by six angels, and by the twelve apostles seated on thrones. The artist was Mr. Gibbs, of London. The glass has been fixed in the window by Messrs. De Putron, of Guernsey.

CHEAP SCHOOL-CHAPEL.

A SCHOOL-CHAPEL has been lately erected at Crampmoor, in the parish of Romsey, Hants. The building is used as a school during the week, and for church-service on Sundays; and the schoolmistress occupies rooms on the south side. The external walls are built of brickwork, 14 inches in thickness, and hollow. The floors are boarded. The roofs are covered with plain tiles. There is a bell-turret, of wood. The nave is 27 feet by 16 feet; the chancel, 10 feet by 9 feet; porch, 5 feet by 4 feet. The living-rooms (two, and a scullery) are plastered, and fitted with range and iron chimneypieces. The cost of the whole, including frames, seats, and lectern in the chapel, and a well in the garden, was about 225*l.* Mr. E. W. Lower, of Guildford, was the architect; Mr. Till, of Romsey, the builder.

ARCHITECTURAL SOCIETY OF ARCHDEACONRY OF NORTHAMPTON.

A COMMITTEE MEETING was held on August the 13th; the Rev. Lord A. Compton in the chair. Plans for the re-seating and enlargement of Ketton Church, by Mr. Scott, were examined. The form of bench proposed was disapproved of. Plans for re-building Sutton Church, near Harborough, by Mr. Goddard, of Leicester, were examined, and generally approved. A design for the restoration of the chancel of Kibworth Beauchamp, by Mr. Slater, was approved; and also, by the same architect, plans for the National Schools at Islip. Plans of the re-seating of Wellingborough Church, by Mr. E. F. Law, which had been formerly approved, were re-submitted to the consideration of the committee. After some other procedure, the subject of the mode of grants made to new and restored churches by the Church Building Societies was considered, and a memorial unanimously resolved on, to be communicated to the Society of the Archdeaconry and the Incorporated Society in London, and which stated, *inter alia*, that "by the rules and practice of this, as of most, if not all Church Building Societies, the increase of accommodation, upon which grants are made, is estimated by the number of sittings shown on the ground-plan; and this, without any reference to their convenience of site, and only partially with regard to convenience of occupation. The result is, that the architect, in order to gain for his employer the largest amount of grant, is led to reduce his seats to the very narrowest measurement allowed, to cramp his passages, crowd in seats into the most inconvenient places for hearing or seeing, and occupy spaces (as for instance, close to the reading-desk, round the font, or in the chancel) which the order of the Church service almost demands to be left open. In many cases, for the sake of showing a greater increase of sittings, the whole are spoilt, and kneeling almost prevented. We should respectfully suggest, if the grant were made according to the available ground area, these evils would be avoided without any attendant disadvantage." The annual meeting was decided on for Tuesday, the 11th of September, when Mr. Poole will read a paper "On the Round Church."

The Architectural Society of the Archdeaconry of Northampton purpose to hold their annual meeting in conjunction with the committee for the Restoration and Enlargement of St. Sepulchre's Church, with the view of bringing its claim more prominently before the public. Of the four remaining Round Churches of England, this is the only one allowed to remain in the desecration and cum-

brousness which years of carelessness have brought upon it: so mauled and mutilated has it been that it is difficult, on entering it, to detect its circular form, and strangers have left it under the impression that they have mistaken the Round Church. The extended claim which it has upon the antiquarian world of England, seems to have chilled and paralysed local efforts. Of its proposed enlargement, the foundations have already been commenced. The contractor for the work became bankrupt at an early stage of the undertaking; but the committee have persevered in carrying on the work.

WITTON CEMETERY COMPETITION: BIRMINGHAM.

AT a meeting of the Birmingham Town Council on the 4th instant, the report of the Burial Board Committee was read by the Chairman, Alderman J. H. Cutler. The following is an abstract:—

"The designs, ten in number, for laying out the grounds at Witton, and the plans and estimates, twenty in number, for the erection of the chapels and other buildings had, since their reception, been suspended in the Borough Surveyor's office for inspection by members of the Council. The committee, after carefully considering the respective merits of the architectural designs, reduced their number to one-half; and, impressed with the importance of the duty entrusted to them, resolved to call in Mr. Stevens, architect, of Derby, a gentleman whose knowledge of ecclesiastical architecture, and high repute in his profession, fully entitled him to the confidence of the committee, to give an opinion in writing as to the best three of the remaining ten plans, and to state whether in his judgment they could be carried out for the sum specified in the printed instructions issued to the architects—5,800*l.* Mr. Stevens reported in favour of the designs of Messrs. Clark, of Nottingham; Naden, of Birmingham; and Holmes, of Birmingham, without expressing any opinion as to their relative merits; but he also regretted that according to his calculations the cost of the buildings, if erected, would exceed the amount to which the architects had been limited. Upon this the committee required the authors of the three selected designs to guarantee the erection of the buildings for the sum specified, to which requisition they replied by referring the committee to estimates obtained from them by builders willing to enter into the contracts for less than the amount named. Mr. Stevens was then called in again to advise the committee as to the relative merits of the three selected plans. The result of a long personal interview with that gentleman was an opinion formed by the Committee that the premium of 50*l.* should be awarded to Mr. R. Clark, of Nottingham, and that the prizes of 30*l.* and 20*l.* should be awarded respectively to Mr. T. Naden and Mr. E. Holmes. The Committee therefore recommended that the prizes should be thus distributed, and that the designs of Mr. Clark should be those adopted by the Council, while their author should be appointed to superintend the erection of the buildings in accordance with them. They further recommended that they should be empowered to advertise for and accept tenders from builders for the erection of the buildings, and that, in the event of all such tenders exceeding the proposed outlay, the designs should not be carried out nor the premium be given to their author, but that the designs of Mr. Naden and Mr. Holmes should be taken in their turn. From the ten designs received for laying out the grounds the committee had selected those of Mr. R. Ashwell, of Coventry (estimated cost, 3,010*l.*); Mr. G. H. Stokes, London (estimated cost, 3,133*l.*); and Mr. W. Davidson, London (estimated cost, 2,500*l.*), as being in their opinion relatively entitled to the premiums of 30*l.*, 20*l.*, and 10*l.*, offered by the committee. The accepted designs became the property of the council; and, as there was no agreement with the competitors as to their employment in the execution of the work, the committee recommended—on the ground that while the three plans were capable of adaptation, none of them were entirely fitted to the purpose—that they might be empowered to amalgamate them in such a manner as to them might seem expedient. The selected designs were hung in the council-chamber."

After much discussion, and the loss of two amendments, the report was adopted.

VENTILATION OF GAS.

CONDITION OF LILLE.

I HAVE for many years lived during seven months of the year in a house composed of a great number of small rooms, lighted with gas. With only a few friends falling in of an evening, the temperature was found very uncomfortable. I set about to find a means to remedy the defect, and employed the following. Over the lustre of three or more burners, and even a single burner, I inserted in the ceiling a cast-iron, ornamental, and very open rosace; and, in the thickness of the joists, a sort of hopper, in zinc, with a pipe of the same, leading therefrom into a flue, or, if below stairs, carried through into a passage and up to the roof, and I have found it peculiarly efficacious. Smoking a cigar in the room, even at a distance from the centre, the direction of the smoke towards the light and the upward current, is very observable. It is an easy, and not expensive alteration to make to any room. I had a room (a bed-room) at the back, to which I was forced (by the dust and dirt of the neighbourhood) to place double windows. The renewal of the air by opening these was very difficult; but, by means of a pipe under the floor, in the thickness of the joists, fresh air was brought in from the street as you would bring in hot air from a calorifère, with a sort of throttle valve to close when not wanted. It answered remarkably well.

This town of Lille has gained for itself great notoriety: great numbers of the inhabitants live and die in cellars, the arch of many of them being below the level of the street. I have frequently thought of you, Mr. Editor, when seeing the inmates of these subterranean abodes shutting themselves in for the night. A commission was named by the Republican Government in 1848, to visit the dwellings of the poor in Lille. Victor Hugo was one of the commission. He made a report which caused great sensation, not only in Paris, but in the provinces: he drew it and coloured it in the dismal style he delights in; but the people still live in cellars and garrets: many prefer the former.

A photographer on the part of Prince Albert, I learn, had been here taking impressions of the greater number of sketches of old masters in the Wicar Collection.

The Picture Gallery in the Town-house is being extended, and will, in a short time, be of great interest. J. L.

STABLE FITTINGS.

SIR,—Iron is rapidly and deservedly taking the place of wood for the fittings of stables; but I think it only right to caution the trade and the public against the danger of iron mangers and racks, as they are very generally made. The plate which forms the top should be curved downwards, not only in front, but likewise all round the insides of the manger and rack, and should not offer, in any part, the abrupt edge of the iron plate for the horse to lay hold of. A bad accident has just happened to a horse of ours from this cause. He laid hold of the front of the manger (as horses generally do when being harnessed): the teeth of the upper jaw got under the projecting edge above described: the groom was unable to release the horse's mouth; and the result was that, in struggling to get free, he broke some of his teeth, and has seriously strained, if not dislocated, his upper jaw. A moment's inspection of these fittings, supplied by an eminent firm, will at once show how easily this accident may occur. A BUILDER.

ILLUMINATING CLOCKS.

THE present mode of illuminating (!) our public clocks is unsatisfactory, all must admit. Why attempt the lighting of the whole dial? Why not rather point the hands with an electric star, by means of a wire or wires edging the two hands, meeting and producing combustion at each point? The intelligence that will seek the time on a dark night will be satisfied by the relative situation of the two star points of white light so produced, even though the whole dial be utterly invisible. I merely suggest this as probably within the capabilities of science.

C. DENT.

PREVENTION OF FIRES.

THE recent fire at Frost Brothers' rope-work, near the Commercial-road, impels me to revive a recommendation strongly urged years since,—the importance, by the appointment, through the Government or otherwise, of a well-qualified, practical man, as an inspector, to see and report upon the safety of the *pitch boilers;* also as to the *quantity* and *disposition* of the *full* and empty *tar barrels* in such works.

I have no hesitation in saying these fires could be made preventible, as they mostly originate in the pitch-boiling.

I have had the misfortune of seeing many destructive fires in London, and was an eye-witness of this at its commencement. In less than five minutes it ran like a train of gunpowder, firing buildings nearly a quarter of a mile in length, and in parts vast sheets of flame ascended a great height: fortunately it was eight o'clock, a.m., and no wind.

Had it been night, with wind, the chances were that the backs of houses to two streets, more or less, would have been destroyed, housing at least from 2,000 to 3,000 souls: even as it is, the fright to hundreds of the women will take a long time to tranquillize.

As a matter of course it is beneath the notice of our M.I.B.A.: as one of the workers, I say it boldly, in these matters it is their duty to suggest plans sufficiently stringent to prevent suffering to hundreds. I should hope the Metropolitan Board will look into this matter; and, if they have the power, they must at once see the importance of appointing such an officer to examine and report upon the way in which destructive fires may be made preventible, by not allowing the cupidity of large firms to put in jeopardy the lives of persons residing in the localities of such factories as use combustible materials. C. V. BERNARD.

THE WINDOWS OF ST. PAUL'S CATHEDRAL.

I SAW with much pleasure your proposal respecting the filling of the windows of St. Paul's Cathedral with suitable stained glass, suggesting that the Corporation and great City companies should take the lead in so desirable an undertaking. The proposition is "Good! very good!! excellently good!!!" and it is much to be hoped that it may be acted upon. One thing is quite certain, that until the cathedral is relieved from that dreadful chalk-pit effect produced by its present undecorated walls, and gaunt white windows, little can be done to give that solemn grandeur which ought to strike every one on entering the cathedral of the greatest and wealthiest city in the world.

Something is now being done to remedy the former of these evils, by gilding the four large arches of the dome; but all the gilding in the world cannot compensate for the want of the "dim religious light" which we are accustomed to look for in our cathedrals.

A commencement, however, has been made in the right direction, by the presentation of a stained-glass window to be placed in the nave, which is being executed by Messrs. Clayton & Bell. And it is much to be hoped that not only the City companies and the Corporation of London, but also private individuals, will follow the good example; and that all who delight in the works of our great English architect will throw in their mite to bring to a happy conclusion that which Wren longed to see. A RECTOR.

HEREFORD OLD TOWNHALL.

SIR,—Will you allow me to submit to your readers a few observations in reference to the censure which, by correspondents of the *Builder* and other newspapers, has been cast upon the town-council of this city because they are about to take down the old Townhall? Being a member of that body, I, and others holding a similar opinion, feel that we are not obnoxious to the charge of Vandalism on account of our advocating the demolition of a decayed building, deformed by successive mutilations, unfitted to the civic requirements of the present day, and an obstructive nuisance, dangerous to the life and limb of wayfarers, and impedimental to the fast growing traffic of the ancient city.

Now, sir, we believe that our perceptions of the sublime and beautiful in art and nature are as deep and as genuine as are those of the fulminators of censure on our barbarism; but we believe, also, that where public buildings have not only outlived the offices for which they were erected in a gone-by age, but are likewise detrimental to the public weal, it becomes an imperative duty of those persons having the authority to remove them, and to provide successors more responsive to the exigencies of the present day. Let us then test our old Townhall by this standard.

The old Townhall was erected by John Abel about three centuries ago, and, doubtless, was a magnificent wooden edifice, forming a noble architectural object in the centre of the city. We learn its form and features from an engraving in Price's map of the city, a copy of which is in the possession of our respected town-clerk. At the time of its erection nearly all the houses in the city were timber-built and gable-ended; and this fine edifice must have stood out in the midst a grand building, harmonizing with the surrounding houses. It has been said that it was only repaired by John Abel, the king's carpenter, but tradition attributes the entire work to Abel, and I am not aware of any reliable adverse authority.

The old Townhall was a gable-ended timber edifice. It consisted of three floors. The ground-floor,—an open-sided area of 84 feet by 34 feet, within which are three rows of oak pillars, 18 inches in diameter, supporting the floor above. The first-floor is of the same extent as the ground, and would form a commodious hall of meeting, but along it run three rows of pillars, corresponding with those below; and these pillars render the room most inconvenient for assemblages of people, and inconvenient too for the stowage of wool and hops, to which purpose it has of late years been applied. In this room all the public meetings of the city were formerly held. There was a second floor above; and this was divided into fourteen chambers, allotted to the fourteen trades, or rather guilds, or companies. In these rooms the respective guilds held their meetings; for in those days the *modus operandi* of every trade was under the rule and governance of its respective guild. Doubtless on this account the old Townhall was originally called the Guildhall.

The building was crowned with a handsome dome-shaped campanile, or bell-tower, the top of which must have been more than 100 feet, and unquestionably formed a striking object to the surrounding country.

A glance at the engraving in Price's map carries conviction that the old Townhall, two or three hundred years ago, was excellently well adapted for its uses in that day, and was a structure of which the city might well have been proud.

But while those centuries have been rolling away great has been the change which time has effected in the old Townhall and in the buildings around it, as well as in the manners and habits of the inhabitants themselves: the times have indeed changed, and we have changed with them.

The handsome and lofty campanile, the second-floor, or upper story, with all its guild chambers, and the beautiful angle windows, have so long since departed that that very old and interesting personage, the oldest inhabitant, has no recollection of them; while the first-floor is covered

with a low, mean-looking roof. This floor is nothing better than a lumber-room, and a very inconvenient lumber-room it is. As to the exterior, that has been so "mauled" and mutilated, and altogether presents such an architectural monstrosity, that could John Abel himself see it, he would not recognise the bastard edifice as the offspring of his own creation.

Well, but it is asked, why not restore the building to its pristine beauty? The negative answer comprises many reasons: a few of them, with your permission, I will briefly state.

Renovation, complete renovation—and anything short of it would not be justice to the architect or his times—would, I am assured, cost upwards of 2,000*l.*: besides, when done, the building would remain an obstructive nuisance, casting a still longer shadow and deeper gloom on the fronts of the houses on either side, and affording only a peculiar accommodation not required in the present day, and not meeting our growing civic exigencies, while it would continue to incommode the increasing traffic, rendering it still more dangerous through the High-square. This last fact may be estimated by the stranger to the city, when he is informed that the carriage-way on one side—the principal way through the city from the London and Shrewsbury railway stations to the South Wales, Brecon, and Worcester railway stations—is but 18 feet from curb to curb; the chief entrance to the poultry and butter markets from the High-square opening right into this road, opposite the centre of the old Townhall!

But if it were renovated on its present site, the building would not harmonize, as it did in days of yore, with the houses around it. Three, nay, two hundred years ago, Hereford did not number 5,000 inhabitants: it now numbers 15,000. Prior to the year 1774, in which our first *improvement* Act was passed, probably all or nearly all our houses were like the old Townhall—timber-built and gable-ended. Their gables so projected from either side of the streets,—we now should call most of them *lanes*,—that the inmates could in many places shake hands; and while the tradesmen sat below, shaded by the gables, discussing civic affairs, their good wives could from the opposite windows above discuss the more interesting, because more personal, gossip of the city. There was but little if any foot pavement: some of the streets were pitched, both the road and footways, with pebbles obtained from the bed of the Wye; while the surface drains throughout the city were allowed to stagnate, and in summer they so festered, that on a memorable occasion I doubt not they were one of the principal causes of a dire visitation in the shape of the plague. In those days the old Townhall did not, as it does now, rattle and resound from the busy passage of the 'bus and the Hansom; the cart and the waggon; the single and pair-horse carriage. Subsequently to 1774, and principally between that year and 1830, a great change was effected in the fronts of the houses of the inhabitants, both trading and otherwise. I believe there are persons living old enough to remember that a load of hay could not pass between the gable-ends of the houses at the top of Widemarch-street, or in the High-street, near the North-gate; but gables, harmonizing as they did with the old Townhall, have nearly all disappeared; and mostly by an operation, which I regret to describe as a *sham*, and to stigmatize as detrimental to the architectural character of the city. The common practice has been to cut off the face, or gable end, and to run up a brick wall in front, thereby leaving the interior of the old house untouched, and handing the whole down to posterity, *an old friend with a new face*,—not a desirable possession in houses any more than in social life. With some exceptions the houses on either side of the old Townhall are of this *sham* character; and although we have many very handsome shop-fronts, we have likewise many small, low-roomed, ill-lighted, ill-ventilated, inconvenient houses.

A renovation, therefore, of the old Townhall, on its present site, would, I venture to submit, be in every respect unwise: it would, indeed, be retrogression instead of progression; and it would be a course which, if Abel himself were alive, would be opposed by the king's carpenter.

For my part, sir, I consider that a great injustice is often committed on the character of great men of former times; Abel-men, who were in advance of their age; who have left a deep mark of progression behind them, a mark which acts as an encouragement to those who come after them, and who, like them, must make up their minds to encounter obstacles in *deeds*, and obloquy in *words*, but who, nevertheless, press forward, and in the end reap their highest reward—that of success. To appeal to such men of centuries ago as authorities for standing still, or remaining at the point where they left the world, is unjust to their memories: it belies the history of their lives, and is, indeed, contrary to the practice of the intellectual pioneers of all ages. If John Abel, and such as he, were citizens of Hereford in the present day, I believe we should find them breathing the spirit of progress at our council board; and Abel himself among the first to advocate the removal of the old Townhall, and the erection of a worthy architectural successor—an edifice which should be consistent with the rising *status* of the city, with the daily increasing traffic in the High-square; in short, an edifice which would meet the wants and requirements of the present day, and in future ages would stand out in the midst of Hereford, as the old Townhall did during the first two centuries after its erection—one of the principal architectural glories of the city.

I have said that I do not think I am insensible to the sublime and beautiful, in art or nature; nevertheless, I am so far a utilitarian, that I would not preserve habitations merely because they are ancient picturesque objects. In Johnsonian interpretation, a knacker's horse is superlatively picturesque; so is a mud cottage, with mud floor and fetid pools here and there; a thatched roof, with rotten straw in holes, and redolent of vermin; a small lattice window, through which the light and air of this beautiful world must struggle for admission. I plead guilty to a preference for neat stone or brick dwellings, with boarded floors, airy rooms, and comparatively large windows, for the abode of civilized man; and further, I indulge the opinion that such habitations operate beneficially on the physical, the moral, and the intellectual condition of the occupants of both sexes and all ages. Such improved cottages may be constructed with a judicious blending of the useful with the ornamental.

But the love of the picturesque, when manifested in an inordinate passion for old picturesque buildings, appears to me to be a phase of insanity. The other day, an artist on a tour honoured me with a call for the purpose of remonstrating with me on the Vandalism, as he was pleased to term it, of demolishing the old Townhall. I walked with him to the building, and I regret to say that he was to me as blind to its present hideousness, as I was to him as to its present beauty. I accompanied him into the country, and showed him some mud cottages, such as I have just described, and which he warmly praised on account of their picturesqueness, but which I dispraised on account of their unfitness for the abode of a civilized man, his wife, and children. I then took him to look at some stone cottages, which I have myself erected about two miles from the city, and which I thought were picturesque, and something more; but which he could not admire, as he did the mangled old Townhall and the filthy mud cottages. I thought, and still think, that such inordinate love for the productions of the past—and it is this extreme veneration that invests every *old* inanimate thing with loveliness—approaches insanity; and that had such a passion been dominant in our city in past ages, the sixteenth century would never have witnessed the erection of Abel's glory—the old Townhall; and had it been always dominant throughout the nation, I very much doubt whether our forefathers, the ancient Britons, would have progressed so far in art as to clothe themselves in the skins of the wild animals of their country.

There is, however, one suggestion as regards the old Townhall, which might be carried out. The old Townhall, being a timber building, might be taken to pieces and be reconstructed on another site. The building will shortly be offered for sale by the Town Council: let the admirers of the splendid edifice, as erected by John Abel, seize the opportunity: let them forthwith raise a subscription, purchase the building, remove, restore, and re-erect it on some site where it may be easily accessible to the stranger visitor, where it will not be a nuisance, but be an architectural ornament and a memento of the public timber edifices erected in England in the sixteenth century. For such a work I would willingly subscribe my mite; and it is a fair test of the sincerity of our censors, who, by "doing likewise," will demonstrate that their love of the ancient building is greater than their love of money.

Hereford. CHARLES ANTHONY, Alderman.

P.S. Since the above has been written, I have read, with as much regret as surprise, two letters from Mr. Clayton; one in the *Hereford Times*, the other in the *Builder*.

In the former Mr. Clayton states, "that the author of Design No. 50 (*i.e.*, Mr. Charles H. Edwards), having given nothing but perspective views, and no geometrical drawings with dimensions, it was impossible to substitute a comparison between designs,—that is, between Mr. Edwards's and Mr. Clayton's." You will, sir, scarcely believe that "no geometrical drawings, with dimensions" or specifications accompanied Mr. Clayton's design for a clock-turret, and that he had possitively had home his design in order to prepare them. This, therefore, is a fling, as spiteful as unjust, against the successful competitor.

In both letters Mr. Clayton observes that his design for a clock-tower was carried by a majority of the votes of the subscribers; to which I again reply, that that majority was an "accident," the result of a "misunderstanding," my belief being that a large majority of the subscribers at that meeting were in favour of Design No. 50; and this belief is strengthened by the fact, that at the meeting of the Council, at which twenty out of twenty-four members were present, only *two* (the proposer and seconder) voted for Mr. Clayton's clock-tower. As to "the motives and good taste" of my observation, being myself conscious of the purity of my motives throughout the whole of this business, I am unwilling to impute improper motives to others: doubtless, Mr. Clayton is moved by no other motive than the honour and welfare of the city. As to the "good taste,"—the slap does not come gracefully from Mr. Clayton, who has *the* taste to cast splenetic reflections on his brother architectural competitors.

In a postscript, Mr. Clayton affects a sorrow, surely more in jest than in earnest: he writes as follows:—"The fine old timber Townhall seems doomed to be removed." Will not you, sir, and Mr. Clayton's brother architects too, be amazed to hear that, three years ago, Mr. Clayton, *de motu proprio*, publicly proposed to demolish the old Townhall, and furnished a drawing of a clock-tower, which he also proposed to erect on its site!—C. A.

THE TRADES' MOVEMENT.

AT Bristol the strike of the operative masons is virtually at an end. The men have agreed to resume work at an advance of 6d. per day, with a promise that on March 1st, 1861, the two hours' labour less per week will be conceded. Several of the masters have agreed to this compromise; and it is expected the others will shortly follow their example.

At Welshpool, the operative joiners are on strike, seeking an advance of 3s. per week, with a reduction of the hours of labour. Two employers have agreed, whilst the others, it is said, are determined not to give way. A guinea per week appears to be the present wages at Welshpool, whilst in Chester they are getting 25s., and in Liverpool 28s. and 30s.

At Bradford (Yorkshire) a numerous meeting of master builders has been held for the purpose of forming an association in the West Riding, as a means of protection against unjust and unreasonable demands on the part of workmen. The principal towns in the Riding were represented. Mr. William Beanland occupied the chair. Several resolutions were passed with a view to active organization. The object of the association is said to be purely defensive.

The miserable strike at Coventry is at an end, but numbers of the weavers are now awakening to the conviction that work is not to be had, on any terms, far less on their own—that they be paid by piece-work; and those who have got work have been thankful to accept it on the masters' terms. It is proposed to introduce the cotton trade into the town to make up for all deficiencies in the ribbon trade. Miss Nightingale was the means of turning the attention of those interested in the Coventry weavers in this direction, by using efforts to have some of the distressed and starving families transferred to Blackburn, in small detachments at a time. The poor are often said to be the kindest and most charitable contributors to the wants of the poor; but this is far from being the case in many such instances as this; and the Blackburn operatives remorselessly set their faces against such an arrangement, although they have made no objection to Irish immigration under similar circumstances. Is it that they are themselves mainly of Irish origin? In one case where twenty-nine looms stood idle, seventy to eighty Blackburn weavers actually struck work because one Coventry weaver was introduced amongst them!

A most nefarious and abominable instance of "the tyranny of strikes" has occurred at Colne, in Lancashire, amongst the power-loom weavers, and has been very properly shown up in the *Times* and the Manchester papers. It appears that in this case money is exacted from those still in employment (girls as well as men) by threats and scandal of the vilest description, actually published in a printed form under the guise of "weekly reports of income and expenditure" of the strike, with the name of a fellow called "Abraham Pinder" attached as secretary. The whole affair reminds one of nothing but the obscene and disgusting publications which once defiled the metropolitan press under the name of "The Satirist," "The Town," &c. It is to be hoped Mr. Pinder has placed himself within the long fangs of the law, and that he will be well clawed before it is done with him.

Books Received.

Lectures, chiefly on Subjects relating to Literary and Scientific and Mechanics' Institutions. By H. WHITEHEAD, M.A., Curate of Clapham; T. C. WHITEHEAD, M.A.; and W. DRIVER. Bosworth & Harrison, Regent-street, London. 1860.

THIS little volume may be described as a record of addresses to the working man by the thinking man. The Rev. Mr. H. Whitehead displays a special ability for the task he so frequently undertakes, of amusing and instructing those who listen to his lectures; and the Clapham Literary and Scientific Institution is fortunate in having so frequently the benefit of his *con amore* services. The rev. gentleman has hit upon the happy medium between the grave and the gay, and loses no fair opportunity of administering light doses of sagacious thought through an attractive and gossiping medium, which must render it pleasantly and easily digestible, even to tender mental organs of assimilation.

The subjects of the lectures in the present volume, besides an introductory one, are,—Lending Libraries—George Stephenson—Literary and Scientific Institutions—Strikes and Documents—System, its use and abuse—Reading-rooms—Silence *v.* Speech—Divide! Divide!—The Talking Fish—Step by Step—Birds of a Feather—and Five Years at St. Luke.

A lecture for a penny appears to be a very good form in which Mr. Whitehead's addresses are sometimes published at Clapham. Thus we observe one in this shape on "The Oldest Inhabitant." Another has been separately published, titled "Beating the Bounds," on the not merely locally interesting subject of Clapham Common.

In reference to the late strike of the London building trade, and to a lecture titled "An Outsider's Views of Strikes and Documents" which was delivered at the Clapham Institution, a correspondence took place between "the Clapham local committee for opposing the Document," and the Rev. Mr. H. Whitehead, in which the latter, who had been invited, but declined, to co-operate with this committee, says,—

"We ought not to shrink from discussing such social phenomena, and from endeavouring to ascertain the laws which produce them. My own opinion is, that the particular phenomena in question are but two of the many pernicious results of the fatal facility with which men now-a-days are compelled and content to think in masses. Commonplace views and commonplace outward measures inevitably ensue. Men who can think out a sound principle get no chance of a hearing. Hence short-sighted 'strikes' and short-sighted, 'documents!' There rise to the surface, alike among men and masters, those who are incapable of calculating aright what will be the consequences of the measures they recommend. It is not my business to judge between them; but it is my business—and I trust it is my constant practice at all times and not merely when a dead-lock comes about—to encourage men to think for themselves and to be true to their own individuality and independence of thought and character. A much freer development of individuality of thought than is now prevalent is required to deliver us from 'strikes' and 'documents.'"

Miscellanea.

NATIONAL GALLERY TRUSTEES.—A return recently made, on the notice of Mr. Coningham, shows that the trustees of the National Gallery have met ten times during the present year.

COST OF PUBLIC INSTITUTIONS.—In the evidence given before the South Kensington Museum Committee, it is stated that, taking the cost of various institutions and exhibitions for 1859, and dividing it by the number of persons who visited them, it is found that in the case of the British Museum the cost was 3s. 2d. for each visitor; at the South Kensington Museum, 1s. 3¾d.; at the Crystal Palace, 1s. 3¼d. The senior trustee of Sir John Soane's Museum in Lincoln's-inn-fields acknowledged that the expense of keeping it open is actually 10s. for each person who visits it.

THE MERCAT CROSS OF EDINBURGH.—A new stone has been laid at the Market-cross, High-street, to mark the site of the ancient cross of Edinburgh. While the street was being laid open, the excavations were carefully watched by gentlemen who have since given a certificate to the effect that nothing in the shape of coins or other deposits were found under the key-stone of the cross. The excavations were carried to the extent of 5 feet in depth, in order to ascertain whether any such deposits had been made. The cross itself was removed, about one hundred years ago, to a park on the Drum estate, and twelve years since a petition to the authorities to restore it was refused. The High-street is at present under repair.

THE ENLARGEMENT AND DIMINUTION OF ENGRAVINGS AND LETTER-PRESS.—We some weeks since gave an account of what was shown of the process for enlarging and diminishing engravings at "The Electro-printing Company's," in Burleigh-street, Strand. Our contemporary, *Once a Week*, in its number of Saturday, the 25th August, gives an interesting and illustrated account of this very useful invention, in which the following particulars are further stated as to a part of the various processes not exhibited on the occasion to which we allude. "If the picture has to be worked with type, the enlarged impression has, of course, to be made from block plates, the printing lines of which stand up like those of a wood-cut. This is accomplished by printing the picture with prepared ink upon a metal plate: the plate is then subjected to voltaic action, which eats away the metal, except those parts protected by the ink."

RUGBY WATER SUPPLY AND SEWAGE.—The artesian well which was begun in 1857, on Mr. Hawkesly's recommendation, is still in progress, but no water has been reached. A shaft, 50 feet deep, was first sunk, and then the boring commenced. The depth now reached is 1,023 feet. The bore has gone through 545 feet of red clay, and it is the engineer's opinion that water will be found so soon as the red clay is entirely penetrated; but the question when that may be, or how many more feet must first be gone through, seems to be a puzzler. The present cost of sinking the well and bore-hole is set down at 2,500*l*. As yet 200 feet of the bore have to be cased with iron piping. Meantime the work has been suspended, and intimation given that this has been done.——At a recent meeting of the Rugby Board of Health Mr. Edmunds read a report respecting the filtering of the sewage outlet, from which it appeared he had paid a visit, in company with the surveyor, to Ashby-de-la-Zouch, and that they there found the means employed more simple and much more effective than the process at Rugby. The surveyor had calculated that there would not be less than 100,000 gallons of sewage per day in excess after Mr. Walker had used all he could. The chairman said he approved of the way in which the sewage was filtered at Coventry. Mr. Edmunds said if lime was used in filtering, the ammonia would leave the sewage, and render it useless as a manure, and that Mr. Walker pumped, by means of steam, not less than 160,000 gallons daily. Mr. Edmunds said at Ashby-de-la-Zouch the deaths had decreased from 30 to 4 per cent. since the construction of the sewage works.

FARM IN UPSALL, YORKSHIRE.—At Upsall, near Thirsk, a farmstead is being erected by Captain Turton, from the designs of Messrs. Hatfield & Goldie. The north front will be seen from a projected mansion. The style of architecture is the Early Gothic. The stone for the most part is local, interspersed with some Whitby stone, brought from the private quarries of Captain Turton, in that district. A belfry ornaments the centre, with a tower to the east, which has a pyramidal capping, supported by columns of calcareous stone (the same as St. Mary's Abbey, York), which contrasts with the yellow iron-veined sandstone of the rest of the buildings. Muir's ventilators are introduced, as well as Richmond & Chandler's steaming apparatus. The site is charming, commanding views along the vale of Mowbray, from York Minster to the Richmond hills. Within a short distance are the remains of Upsall Castle, built by my Lord Scrope,—

> "Go therefore hence,
> Poor, miserable wretches, to your death,
> The taste whereof God of his mercy give
> You patience to endure, and true repentance
> Of all your dear offences."
> *Shakspeare, Henry V., act ii., s. 2.*

This Henry Lord Scrope was succeeded by his brother, Sir John le Scrope, who was summoned to Parliament as Lord Scrope of Upsall from January, 1426, to May, 1455.

OPENING OF THE NEW IRON CHURCH AT KILBURN.—An extensive new iron church has been opened in the Carlton-road, Kilburn, parish of Willesden. It has been erected by Messrs. Tupper & Co., of the City, under the immediate supervision of Mr. Brown, one of the firm.

DARLINGTON MARKET COMPETITION.—The Darlington Board of Health, at their meeting on Friday in last week, awarded the premiums for the designs sent in for the proposed covered market, as follows: "Utilitas" (no name accompanying the design), 50*l*.; Messrs. Pritchett & Son, Darlington, 30*l*.; Mr. R. B. Dixon, Darlington, 20*l*.

THE IPSWICH SHOP-BLINDS.—A report of shop-blinds under 7 feet, the height allowed by the Local Committee, was presented by the surveyor to the Paving and Lighting Committee, and it appeared that some were extremely low, one being but 5 feet 2 inches from the ground. The Clerk said it was quite understood that the Committee could not alter the law: the law said 8 feet, and any party who might feel aggrieved might summon the owner before the magistrates. The surveyor said that in the principal towns the law was carried out, and 8 feet was the limit. It was determined that all parties whose blinds were less than 7 feet should be proceeded against if they did not alter their blinds by the next meeting.

AN ERUDITE CONTRACTOR.—Amongst the replies to advertisements published by the Leek Improvement Commissioners for tenders for the execution of public sewerage works, the following epistle, dated August 20th, was received from a contractor, in the neighbourhood of Manchester. Here it is, *verbatim et literatim*:—"Tender for the Leek sewer per yard at 3 feet 3 inches as the advertisement state 2*l*. 15s. per yard or according to the kind of ground as it may be as i have not seen the Specifition i am willing to make any agreement of price as will do the work and small sewers and others at a reduced price as one half or one third sise just according to be reduced. With haveing seen the advertisement late i had not to send for a few lines of the specifition send a few lines of the work by thursday." This accommodating document was addressed, "Mr. Hacker and Bloore law clarks public office, Leek."

A NEW PESTILENCE.—Reports have been received from the camp at Shorncliffe, during the last two or three months, which allude to the prevalence of a disease hitherto totally unknown to the climate of England. It is described in the *United Service Gazette* as "a disease which, although not, strictly speaking, genuine yellow fever, yet is so near akin to that fearful tropical malady as to inspire the medical authorities upon the spot with a due sense of the importance of instantly checking its inroads." The doctors, it is added, trust that, with the help of the continued cool weather and the airy position of the camp, they will soon be able to eradicate a disease for which they cannot account, and which terrifies the neighbourhood like the ancient plague. Another account says this is an exaggeration. Long ago we heard bad things of Shorncliffe.

THE NEW STAMP DUTIES.—The new Stamp Act (No. 2 of the late session) has been issued. The new duties are chargeable on the passing of the Act. From and after the 31st December the allowances now made on bill and receipt stamps are to cease, and a new allowance of 10d. in the pound is to be made. The duties on foreign promissory notes are to be denoted by adhesive stamps, or impressed stamps, and adhesive stamps or impressed stamps may be used for insurances. The duty on policies of insurance on lives for sums not exceeding 25*l*. is reduced to 3d. *There is no duty on an insurance of workmen's tools for sums not exceeding* 20*l*. The duty of 1d. on a delivery order is to be paid by the person requiring the order. Persons in the service of the Post-office may sell postage stamps. This provision states that "it shall be lawful for any person in the service or employment of the Post-office, without any licence or any authority other than this Act, to carry about for sale and to sell at any place or places within the United Kingdom postage stamps and printed forms of any kind, issued or used at the General Post-office, and any other matter and things relating to the business of the Post-office, and such person shall not be subject or liable to any penalty or forfeiture for so doing, anything in any Acts to the contrary notwithstanding." It is provided by the Act that if the Treasury direct that the district registrars be paid by salary, they may also direct the fees to be collected by stamps. The new duties are set forth in the schedule annexed to the Act, and it is expected that the duty on policies against accident will yield a large amount to the revenue.

FALLING IN OF A CHAPEL AT SWANSEA.—A portion of the front of the Primitive Methodist Chapel, now being erected in Pell-street, has fallen in, tearing away in its descent a considerable portion of the scaffolding placed at that end of the building. Fortunately the men had left work, and the wall fell inwards. The prevailing wet weather is thought to have caused the mass of brickwork to fall.

FALL OF A HOUSE IN BOMBAY.—The papers by the Overland Mail say that a fearful catastrophe happened on the 18th of July, by the falling of a house, burying no less than eighteen of the inmates in the ruins. It occurred at 11 o'clock at night. By the most active exertions of the officials, eighteen were taken out of the ruins in a comparatively short time. Five were dead, two all but dead, and eleven were so horribly mangled that very little hopes were entertained of their recovery.

SURVEYORS SURVEYED.—The Coventry Board of Health have just come to rather a novel resolution with respect to their surveyor, namely, to constitute him the successful tenderer for the re-construction of a culvert, and to appoint "an independent surveyor" to see that the work is rightly done! One of the members of the Board (Alderman Browett) remonstrated with them on the absurdity of such a course; but it was of no use, and the Coventry Board of Health have determined to follow out their Japanese spy system, which they appear to regard as a capital idea. They only require, for their complete self-stultification, to appoint, as the "independent surveyor," that enterprising tailor who urged his capabilities for such an office on the ground that he was accustomed to use the tape line, and to take measurements. The precedent, in our opinion, is not only an absurd, but a dangerous one. If the Coventry Board of Health have not full confidence in their surveyor, why not dismiss him, and appoint another in his place? Their present course is precisely that of the Japanese, who appoint one "confidential" agent to act as a spy upon another agent equally "confidential." The following were the tenders sent in for the re-construction of the culvert:—

Mr. Abraham Salt.....	£267	10	0
Messrs. Hallam & Co.	240	0	0
Mr. Alfred Mault	225	0	0
Mr. James Wilson	198	15	0
The surveyor's estimate ...	118	4	6

STREET TRAMWAYS.—The horse-railway in Birkenhead, for which Mr. Train, of Boston, U.S., was the contractor, has now been opened. It extends from the Woodside Ferry, the landing-place at Birkenhead, just opposite the centre of Liverpool, by the shore-road, through Angle and Conway streets, and so on to the entrance to Birkenhead Park. The whole distance is little more than a mile and a quarter. A junction in Conway-street enables the carriages to return from the park by Hamilton-street to the point from which they originally started. The tramway consists simply of two iron plates, each raised about an inch on the outer side. They are fixed upon longitudinal bearers, which rest upon transverse sleepers, and are so let into the street as to run completely on a level with its surface. To ply on these iron plates carriages for 50 to 60 passengers each have been built by Mr. Main, of Birkenhead. They are, of course, more than double the size of ordinary omnibuses, but are somewhat similar in shape, and are provided underneath with wheels like those of a railway carriage, but somewhat smaller in size. Each carriage is 24 feet long by 7 feet wide; 7 feet being also the height of the interior from floor to roof. It furnishes sitting room for 24 persons inside, and for as many more outside, for whose protection a handrail runs round the top. A space of two or three feet intervenes between the passengers on each side of the interior. A small platform at each end, raised about a foot and a half from the ground, and separated from the horses, which may be yoked to either end, affords the means of ingress and egress. The carriages are fitted up in rather a gaudy style. For ventilation, each has its siding windows, with "louvres," to prevent a draught. An idea seems to be entertained that such a tramway and its adjuncts are unprecedented in Europe; but, for some years, the very same sort of conveyance (which, by the bye, we have for many years advocated, for London and other towns, in the *Builder*) has existed in Paris. There are also tramways (of granite) even in the streets of London, the last of which were laid along new Westminster Bridge; but large omnibuses specially adapted to run along such tramways—and, indeed, tramways specially adapted for such omnibuses, have not yet existed in London.

STEAM-HAMMERS.—Messrs. Hewitson & Walker, of Leeds, have patented some improvements in steam-hammers. They propose to apply a lever in such a manner that one end thereof is attached to or near the hammer, so that that end of the lever moves to and fro with the hammer; and by its other end the lever, through the intervention of tappets, levers, rods, or other suitable gearing, gives motion to the valve.

THE OPEN SEWER IN BATTERSEA PARK.—Whether in consequence of what was said in the *Builder* recently on this subject or not, we cannot say, but we are glad to observe that the Chief Commissioner of Works has written to the Metropolitan Board, requesting them to order the deodorization of the sewage running through the park, and further requesting that the sewer may be diverted.

IMPROVEMENTS NEAR VICTORIA PARK.—For some time past there has been a desire on the part of the inhabitants of the parish of Limehouse to be able to have access to Victoria Park. An intimation to that effect having been forwarded to the Metropolitan Board of Works, measures have been taken to carry out that object; and, in order to effect it, a number of houses on the line of road leading from Limehouse to the Park have been sold, and are to be removed in order to form a convenient communication between the Park and Limehouse.

PROPOSED STREET FROM SOUTHWARK TO BLACKFRIARS ROAD.—A large number of houses situate in Gravel-lane, Christchurch, and Blackfriars-road, have been sold, in compliance with directions from the Metropolitan Board of Works, and are to be taken down and cleared away for the purpose of the formation of the new street from Southwark to Blackfriars-bridge-road. The Board, it is said, have entered into arrangements with nearly all the owners and occupiers of property throughout the distance.

TRAFFIC RETURNS.—The traffic returns of railways in the United Kingdom for the week ending August 18th amounted to 584,585*l.*, and for the corresponding week of the last year to 546,285*l.*, showing an increase of 38,700*l.* The gross receipts of the eight railways having their termini in the metropolis amounted to 255,626*l.*, and for the corresponding period of last year to 240,861*l.*, showing an increase of 14,865*l.* The receipts on the other lines in the United Kingdom amounted to the sum of 329,359*l.*, and for the corresponding week of last year to 305,424*l.*, showing an increase of 23,935*l.*

REST FOR THE WEARY.—A seat for tired pedestrians has been conveniently placed within a railed space in front of St. George's Hospital, Knightsbridge, and is made good use of. A few years ago, when we first mooted the desirability of providing such seats in towns and their suburbs, the idea was laughed at. Gradually, however, it is making progress. The drinking-fountain at St. George's Hospital, close to the seat in question, is greatly used. We pass it several times a day, and never do so without seeing a drinker or two indulging. The flow here appears to be properly arranged, so that there is no sloppy mess around it. Some of the drinking-fountains, through inattention in this particular, have become a nuisance.

MONUMENTAL.—The statue of Dr. Isaac Watts, at Southampton, his native town, has been commenced. It will be erected in the public park in July next, on the anniversary of his birth. The statue and basso relievos will be of Sicilian marbles, and the pedestal polished Aberdeen grey granite. The total height will be nearly 20 feet. The sculptor is Mr Lucas, of Chilworth, near Romsey.——A monument to Samuel Crompton, the inventor of the spinning mule, has been resolved upon at Bolton. The movement began with working men. A committee has been appointed, and Mr. R. Heywood has promised 50*l.* He stated that a bronze statue would cost 1,500*l.*: but there is talk of an educational charity for factory workers.——A piece of sculpture has just been erected on the wall of the north aisle of Glasgow Cathedral, opposite the south entrance, to the memory of the officers and men of the 93rd Highlanders who fell in the Crimea. The memorial has been erected by the regiment, and was designed and executed by Mr. John Steell, R.S.A., Edinburgh, sculptor to her Majesty for Scotland. One of the 93rd Highlanders—the standard-bearer of the regiment—who has received a fatal stroke from the hand of the enemy, is represented as being supported by the goddess Fame. The material is fine white marble. Various designs by sculptors of London were received, but Mr. Steell's was adopted. The colours which the regiment had in the Crimea are to be placed on each side of the monument.

SELF-MOVING VELOCIPEDES AND CABS.—We have occasionally pointed attention to the possibility of applying some simple mechanical or other power to the movement of small carriages, such as velocipedes, bath chairs, cabs, &c. Our idea, it appears, is being carried out at Paris, according to the *Star*, which states that "a carriage, propelled by neither steam nor gas, but by the simplest screw imaginable, has recently been beheld for the first time in the streets of Paris, going with such amazing swiftness as to leave far behind the four-in-hand carriages of the Jocky Club, which endeavoured in vain to keep up with it. The inventor is said to be a poor man, who has constructed the vehicle entirely himself."

THE TAPPING OF THE GANGES.—"The long-hoped-for, long-wished-for, long-expected, and long-deferred event, of tapping the Ganges at Rajmehal," says the *Engineers' Journal* of Calcutta, "has at last been accomplished. The 4th of July, the anniversary of the declaration of American independence, will be for ever a memorable day in the annals of Indian railway enterprises. On that day the railway was completed from Calcutta to Rajmehal; the rich, fertile, and expansive alluvial plains of the Gangetic valley were placed in direct communication with the great seaport of Eastern India; and the commencement of a new and most brilliantly promising epoch in India's history was inaugurated as the last trenail was well driven home." One of the first runs on the line was that of a party of officials who went from Rajmehal to Calcutta in about four hours, or at the rate of twenty miles an hour, so that the line is in working order throughout. Mr. Turnbull, with Mr. Vigors and Mr. Denham (two district engineers), and other officers of the line, were present at the opening.

LICHFIELD CATHEDRAL.—The dean and chapter of Lichfield Cathedral have issued a second report on the restorations now in progress. The sum required for proposed additional works will not be less than 3,000*l.*, together with the ordinary fabric fund. The following estimated sums are still required to complete the choir:—Reredos, 1,600*l.* to 1,800*l.*; sedilia and canopies, 300*l.*; screen opposite sedilia, 150*l.*; four screens and gates east of stalls, 560*l.*; steps to the communion-table, marble, and encaustic tiles, 60*l.* A proposal has been issued to raise the money for the pavement east of the stalls and below the steps, 270*l.*; pavement between stalls, 147*l.*; pulpit (a moveable one), 100*l.*; faldstool, 75*l.*; oak benches for nave and transept (say forty in number, at about 6*l.* each), 240*l.*; remainder of gas fittings for lantern and nave, 200*l.*,—by contributions from those numerous parishes the church, school, or parsonage of which has been in some way beautified through the liberality of the late Mr. Herbert Minton.

NEWS FROM HAYTI.—The editor of the *Progrès*, of Port-au-Prince, Hayti, says that the elements of great prosperity and high civilization abound in Hayti; that it possesses mines of different kinds, and of surprising qualities. The government of Hayti, continues he, has caused two coal mines to be examined: they are found to be of vast extent, and of a very superior quality. One of these is situated twenty-one miles from the town of Cayes. The coal might easily be transported from the mines to the town of Cayes by means of a railroad. It is the intention of the government of that island to invite foreign companies to work these mines. An iron mine has also been examined. This is found near the town of Anse-a-Veau, close by the sea. The quality of the iron is identical with that from Sweden.

PUBLIC EXHIBITIONS.—The following table of the number of visitors at various public institutions and gardens shows the extent to which each proves attractive. The first three may be considered as in town, and the remainder as out of town; but in December last the Vernon gallery was removed from Marlborough House to South Kensington, and above 50,000 of the visitors to that gallery in 1859 went to it in that month, after its removal. The Great Exhibition year is given to show its unprecedented numbers:—

	1851.	1857.	1858.	1859.
British Museum ..	2,527,216	621,034	519,565	517,895
National Gallery ..	1,005,705	640,850	553,766	789,401
Vernon Gallery....	253,152	250,770	238,377	172,727
Zoological Gardens	667,243	339,217	351,580	364,356
Kew Gardens.....	327,900	361,798	405,876	384,698
Hampton Court Palace	350,848	173,710	218,035	208,264
Science and Art Department Museum	—	284,953	456,288	475,365

THE GODWIN SANDS: FLOATING SHIPWRECK ASYLUM.—Rear-Admiral J. N. Tayler, C.B., has invented a floating apparatus for the rescue of the shipwrecked on the Godwin Sands. It consists of an open-framework of timbers, 160 feet long by 36 feet beam, moored by chains, piles, and anchors, and furnished with life-boats, and other requisite means for the preservation of life, together with a cabin for the life-preserving crew, saloons for the shipwrecked, and other requisites. It is proposed to be moored at the edge of the Sands. For forming harbours, a sufficient number of sections are to be placed in a continuous line, the intervals being filled up by a double line or chain-netting. Models are to be seen at the United Service Institution, Whitehall.

TENDERS

For the erection of a boundary and retaining wall on the Millbrooks Estate, borough of Plymouth:—

Foot	£340 0 0
Blight	319 0 0
Hammett & Stephens	315 0 0
Clarke	299 19 0

For a house at Sawbridgeworth for Wm. Barnard, Esq. Mr. G. Perry, architect. Quantities supplied:—

Markwell	£837 10 0
Bull	814 0 0
Glasscock	770 0 0
Dickinson	759 15 0
Burton	755 0 0
Nicholls (accepted)	745 0 0

For building a villa at Wimbledon. Mr. W. A. Bulnois, architect:—

Smith	£3,677 0 0
Elliott	3,575 0 0
Lucas	3,465 0 0
Avis & Co.	3,410 0 0
Holland	3,360 0 0
Myers	3,245 0 0
Longmire & Burge	3,198 5 0
Macey	3,144 0 0
Adamson & Sons	2,941 0 0
Evans, Brothers	2,773 15 0

For 3,730 feet of 18-inch and 24-inch pipe sewer for the Commissioners of Pavement, Canterbury. Mr. Collard, surveyor:—

Capon	£2,062 15 0
Porter	1,678 15 0
Vincent	1,676 7 6
Gaskin & Godden	1,336 11 8
Garrett	1,299 0 0
Shrubsole (accepted)	1,153 5 10
Potter & Love	1,074 17 6

For Independent Schools, High-road Well, near Halifax. Messrs. J. E. & J. D. Oates, architects. Quantities supplied by the architects:—

The whole, exclusive of Smith's Work and Heating Apparatus.

Ambler & Taylor	£679 0 0
Charnock & Booth	674 0 0
Webb	664 0 0
Walton & Dilworth	615 5 0
Walsh & Sons	614 10 0
Masonry.	
Mausley & Turner	365 0 0
Greenwood & Wormald	320 0 0
Gledhill & Turner	319 6 6
Tully	312 10 0
Webb	310 0 0
Oates	297 0 0
Walsh & Sons	291 10 0
Wood Work.	
Webb	220 0 0
Simpson	210 0 0
Townsend & Drake	210 0 0
Pulman	187 0 0
Bedford	186 0 0
Tully	172 0 0
Slating and Plastering.	
Taylor	86 8 0
Webb	85 0 0
Collins	78 0 0
Tully	77 0 0
Ambler & Taylor	76 0 0
R. Taylor	75 3 0
Lister & Pickard	75 0 0
Plumbing and Glazing.	
Daniel	33 5 0
Tully	33 5 0
Dyson	31 3 6
Stafford & Co.	28 10 0

For New Cattle Market, Derby. Mr. T. C. Thorburn, C.E., Borough Surveyor:—

	Division No. 1. New bridge over canal and continuation of Mill tram arches.	Division No. 2. Furnishing and delivering the iron castings and the wrought iron-work.	Division No. 3 Sewering, draining, and completing market.	Division No. 4. Making and completing new road on north-east side river Derwent.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Clarke & Son	1066 1 2	....	3416 5 9	632 12 6
Hyslop	*720 0 0	....	3350 0 0	*554 0 0
Tomlinson ..	....	....	*3021 16 9	586 16 0
Hill & Smith..	....	1041 5 1	....	....
Swingler	....	1004 13 0	....	....
Handyside&Co	....	837 15 0	....	....
Haywood	....	813 0 0	....	....
Cliff.....	....	*764 13 0	....	....

* The Committee recommend the Corporation to accept these tenders.